

RESULTS OF THE KYOTO UNIVERSITY
SCIENTIFIC EXPEDITION
TO THE KARAKORAM AND HINDUKUSH, 1955, Vol. II

FLORA OF AFGHANISTAN

By
SIRO KITAMURA

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Upper : Sino-Japanese Region, Cold temperate zone, Nuristan, near Pronz about 2500 m. Herbaceous meadow along Pech River.

Lower : Central Asiatic Region, Cold temperate zone, near Shibar Pass about 2700 m. *Ferula diversivittata* scattered on a hillside.

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Scientific Expedition to the Karakoram and Hindukush

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EDITORIAL NOTE

THE results of the Kyoto University Scientific Expedition to the Karakoram and Hindukush, 1955, will be published in seven separate volumes dealing with the botanical, zoological, anthropological, and geological aspects of the Expedition. Volumes will not be issued in numerical order, but will be published as soon as the various sections are ready.

The present volume has been published with the assistance of the Fauna and Flora Research Society, Kyoto University.

Kyoto
March 31, 1960

K. H.

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Introduction

Afghanistan is situated in the middle of the Eurasiatic continent between lat. $30^{\circ}25'$ and $38^{\circ}31'N$ and long. $60^{\circ}45'$ and $72^{\circ}E$. (Wakhan extends eastwards to long. $74^{\circ}51'E$.) The total area of Afghanistan is about 635000 sq. km.

Phytogeographically, the greater part of this country belongs to the West and Central Asiatic region, and the Southern lowland belongs to the African-Indian Desert region and the eastern part belongs to the Sino-Japanese region.

We Japanese botanists wanted to know the flora of the westernmost boundary of the Sino-Japanese region.

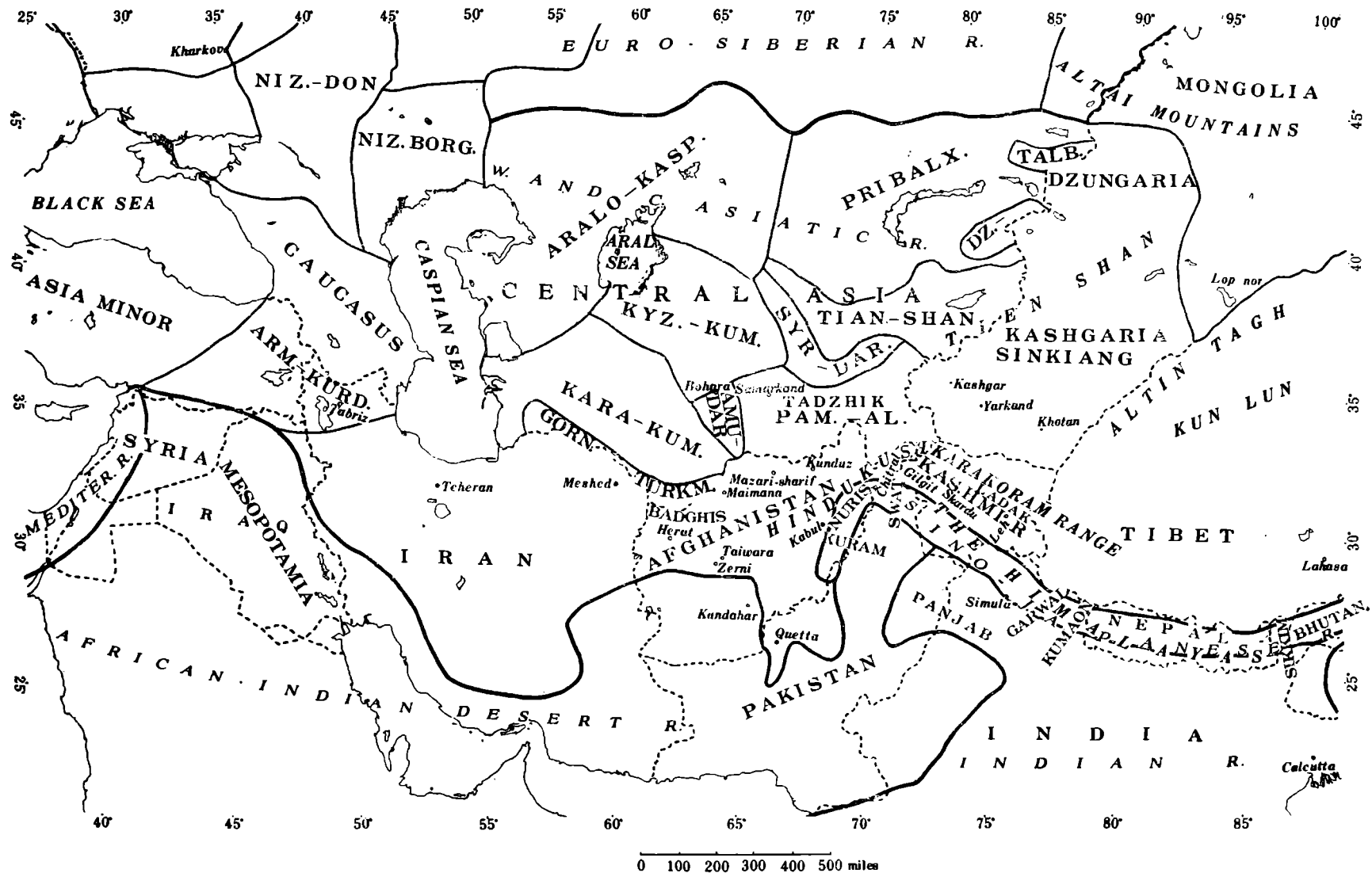
We were given the specimens collected by Dr. O. Suzuka brought from Afghanistan and Pakistan in 1952. And also as we studied the Nepalese specimens collected by S. Nakao, a member of the Japanese Himalayan Expedition, 1952-53, we felt the necessity of getting the specimens of the more western region: the eastern part of Afghanistan and Karakoram, for further critical study.

Thus we decided to add a party of wild plant researches beside the party of cultivated plant researches to the branch of Botany of our expedition. The chief object of the party of cultivated plant researches was to get an accurate knowledge about the distribution of *Aegilops*, while the object of the party of wild plant researches was to get a general knowledge about the flora of Afghanistan, of which no flora has ever been published.

History of Botanical Researches in Afghanistan.

Classical collections. The flora of Afghanistan was first explored by W. A. Griffith, the English botanist who accompanied the English army, from April 1839 to September 1840. He entered Afghanistan from Quetta of Pakistan to Kandahar and then travelled to the north and reached Kabul on Aug. 10, 1839. On Aug. 24, he advanced further north into Hindukush and through Koh-i-Baba to Bamian. He went back to Kabul on Sept. 17. In October he travelled eastward as far as the frontier of Pakistan. From January to June 5, he went along the Kunar river and reached Chagasarai, and collected plants at Bharowl (March 7, April 10-12) and at Otipore ($34^{\circ}54'38''$, April 7). He came back to Kabul. From June to the end of September 1840, he visited Bamian again. His excellent collection was distributed widely in the European herbaria and was studied by many botanists, especially by E. Boissier. The results were published in Boissier's *Flora Orientalis* I-VIII (1869-1888).

Prof. A. Bunge, as a member of the Russian Scientific Expedition to Persia and Afghanistan, collected plants in Iran and in the western parts of Afghanistan during 1858-1859. He herborized near Herat during the dry season, 1859. His specimens were studied by himself and also mainly by E. Boissier and published in his *Flora Orientalis*. In this work, the locality between Herat and Tebbes (Iran) is frequently referred to.



Map. 1. Phytogeographical Map of Central Asia and neighboring regions.

J. E. Aitchison, the English Surgeon-Major, collected plants from April to August in Kuram Valley (including the eastern part of Afghanistan), as he accompanied the English army in 1879. He studied his own collection at Kew and reported his result in the Journ. Linnean Society Vol. XVIII: 1-113 (1880). In 1880, he again botanized in Kuram Valley. The result was published in the Journ. Linn. Soc. XIX: 139-200 with 26 plates.

From Sept. 1884 to Aug. 1885, Aitchison explored the southern and western parts of Afghanistan. He started from Quetta and travelling through Balouchistan and Southern Afghanistan, reached the Helmand River at Hudjali and then went down along the Helmand River to where it flows into the Hamun Marshes. He then advanced to the north and reached Herat. He collected many plants in the Hari Rud Valley and Badghis. His report was published in the Transactions of the Linnean Society, second series, Vol. III: 1-139 with 48 plates.

Until lately, the chief Afghan materials of the plant taxonomy were the specimens collected by these two English botanists and the above-mentioned Russian botanist.

The total number of the species of the flowering plants of Afghanistan was approximately 1700.

Recent collections.

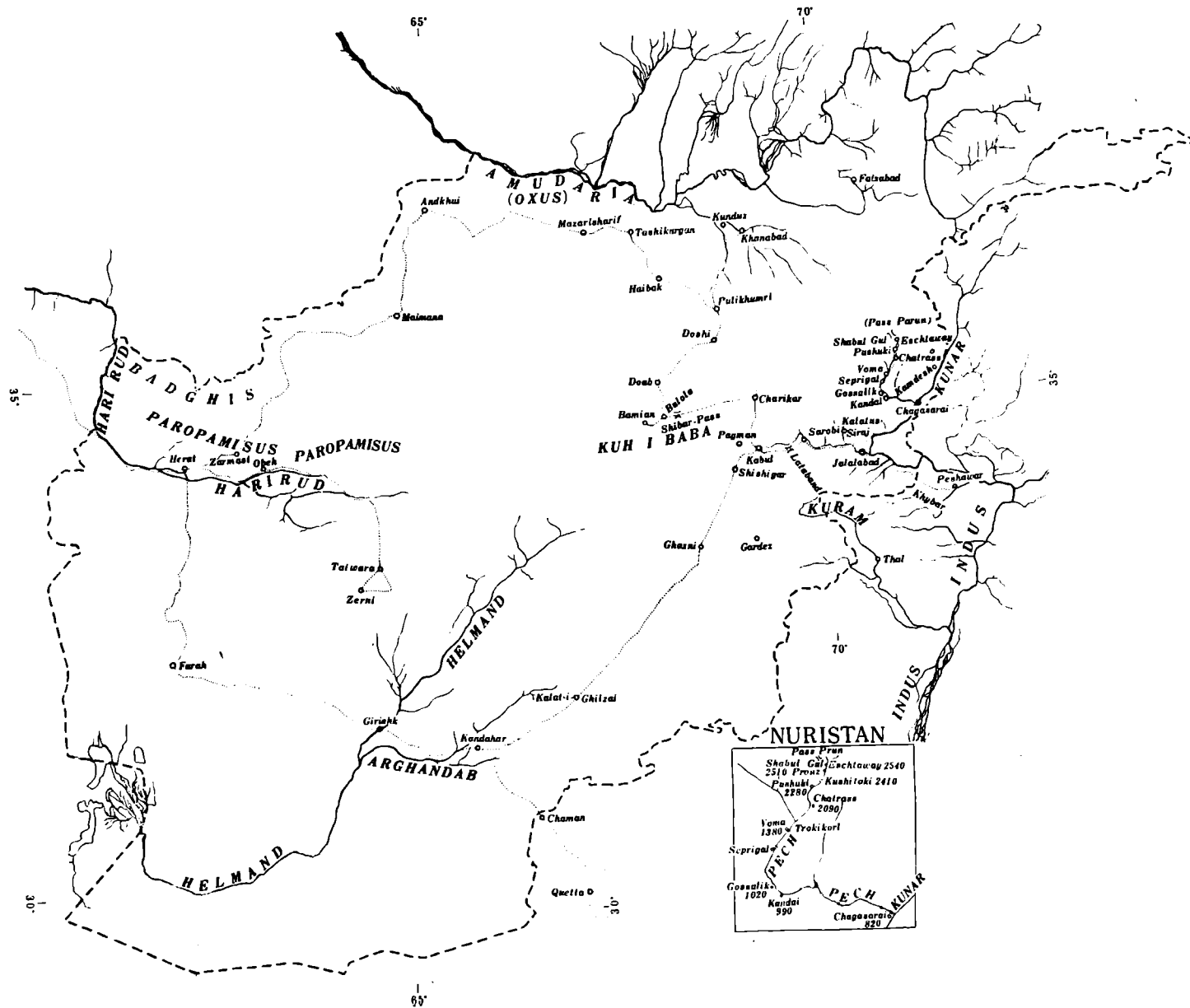
In 1924 and 1926-27, N. T. Vavilov and P. P. Bukinich travelled through Afghanistan, gathering many seeds of cultivated plants. In 1929, Vavilov published the interesting results of his expeditions. But his work was chiefly on the cultivated plants. Some grasses were described by Rochevitz (1928).

During 1923-29, C. Manger collected some plants near Kabul. These plants were studied by Bornmüller and published in Engler, Bot. Jahrb. 66: 216-248 (1934).

In 1935, G. Kerstan, a member of the German Hindukush Expedition, botanized in Afghanistan, especially in Nuristan, from June to August. The result was only partly published in Fedde, Repertorium Beih. 108. Of the Flowering plants and Ferns, I. Haeckel published new species.

During 1937-1939, Walter Koelz collected plants for the Industry Station, Beltsville, Maryland, U. S. A. From May to September 1937, he collected chiefly in the northeast parts of Afghanistan. In 1937, from August to October, Koelz travelled from Kabul, going northwest through Shibar Pass to Maimana and turned back to Balkh. During October and November, 1939, he travelled from Kabul-Kandahar-Girishk-Farah-Herat-Zermast Pass to Andhhu in the northern lowland.

M. Koie and L. Edelberg as members of the third Danish Expedition to Central Asia, collected many plants in Afghanistan, during 1948-1949. M. Koie and Mrs. Koie travelled from May to June, 1948, along Kandahar-Farah-Herat-Sunzak Pass-Kandahar-Kabul. In June, they attacked the central part of Afghanistan through Unai and Panjo to Daulat yar on the Hari Rud River. In August they collected



Map. 2. Map of Afghanistan showing the localities of our collections.

along Kabul-Shibar Pass-Bamian-Band-i-Amir-Doab.

L. Edelberg herborized in Nuristan from Feb. to Aug., 1948. In 1949, he made an excursion to Deh Kundi in the upper reaches of the Helmand river.

Koie and Edelberg travelled via Kandahar to Herat, and then from Herat to Bala Murgaab and Maimana during Feb.—Mar., 1949. In April they worked between Herat and Farah and between Herat and Chist on the Hari Rud River.

During 1948–51, H. F. Neubauer collected chiefly in the eastern and northern parts of Afghanistan. In Aug., 1951, he travelled to Nuristan from Asmar to Vaigal and the Pech River.

O. H. Volk collected during 1950–1953, mainly in the western Badakshan and east of a line between Kabul and Gardez.

These recently collected specimens (the total number amounts to about 11000) are studied chiefly by K. H. Rechinger of the Natural History Museum of Vienna. He published several short reports of new species. He also published with M. Koie, *Symbolae Afghanicae*: I, Labiatae (1954); II, Compositae (1955); III, Leguminosae (1957); IV, Cruciferae, Scrophulariaceae, Rubiaceae etc. (1959). In these last works many new species were introduced with plates.

The Japanese Expedition.

The first Japanese botanist who brought home the Afghan specimens was Dr. O. Suzuka of Nippon-Shinyaku Company, Kyoto. He travelled through Afghanistan and Pakistan in the Spring of 1952, for his study on *Artemisa maritima*. He also collected plants from Kabul, Abottabat, Rawalpindi, etc.

In 1954, Prof. S. Iwamura, a member of our expedition of 1955, travelled through Afghanistan for his study of the Mongolian relics from the view point of Humanistic Science. He gathered some plants at Ashtarlai, Hazarajat, central Afghanistan.

The botanical branch of the Kyoto University Scientific Expedition, 1955, consisted of four members: Prof. Dr. H. Kihara (the leader of the expedition) and Prof. Dr. K. Yamashita who made a party for cultivated plants. Prof. Dr. S. Kitamura and Assist. Prof. S. Nakao who made a party for wild plants.

Among the members of the expedition, H. Kihara, K. Yamashita, T. Umesao (Humanistic Science) and T. Yamazaki (Humanistic Science) collected wild plants in Afghanistan.

Itineraries of the wild plant collection in Afghanistan, 1955.

May 24–May 30 Quetta (Pakistan): Kihara and Kitamura

May 31–June 4 Chaman (Pakistan): Kihara, Yamashita and Kitamura.

June 6–June 7 Kandahar–Kabul: Kihara and Yamashita.

June 5–June 8 Kandahar: T. Umesao, T. Yamazaki and Kitamura.

June 9–June 11 Kandahar–Kabul: Umesao, Yamazaki and Kitamura.

June 15–June 18 Kabul–Sarobi–Jalalabad–Kabul: Yamashita and Kitamura.

June 19–June 22 Kabul: Kitamura.

June 23–June 27	Kabul–Shibar Pass–Bamian–Mazarisharif: Yamashita and Kitamura.
June 28–June 30	Mazarisharif: Kitamura.
July 1–July 4	Mazarisharif–Pulikhumri: Kitamura.
July 5–July 11	Pulikhumri–Kunduz–Pulikhumri–Shibar Pass–Kabul: Kitamura.
June 29–July 5	Mazarisharif–Maimana–Zarmast Pass–Herat: Yamashita.
July 12–July 24	Kabul, Pagman: Kitamura.
July 25–July 27	Kabul–Jalalabad–Chaga–Sarai–Kandai: Kitamura.
July 28–Aug. 6	Kandai–Seprigal–Voma–Trokikorl–Pawata–Chatrass–Kushimaicot–Pushuki–Pronz–Eshtaway–Shabul Gul: Kitamura.
Aug. 6–Aug. 14	Shabul Gul–Eshtaway–Pushuki–Voma–Kandai: Kitamura.
Aug. 15–Aug. 20	Kandai–Morchal–Chaga–Sarai–Jalalabad–Kabul: Kitamura.
Aug. 21–Aug. 29	Kabul: Kitamura.
Sept. 2, 8.	Taiwara and Zerni, Hazarajat: Umesao.

Identification. The identification or naming of these specimens was made by the present author with the help of many taxonomists; T. Koyama (Cyperaceae), J. Ohwi (Gramineae), M. Tamura (Ranunculaceae), M. Midushima (Caryophyllaceae), H. Hara (Saxifragaceae, Geraniaceae), T. Yamasaki (Scrophulariaceae), G. Murata (Labiateae). We are very grateful to our colleagues for their valuable help.

Line drawings. Line-drawings of this work were drawn from the type specimens by Mr. Yoshihide Momotani (Fig. 41–43, 46–105) and Tetsuo Koyama (Fig. 44, 45).

Acknowledgement. For the permission of our journey, we are thankful to the government authorities of Afghanistan. During my journey in Nuristan, Mr. Abdul Hakim Khan, Alaquadar of Kandai, Mr. Asadulah Khan, Hokem of Pech Valley, and Mr. Abdul Majid “Jabbor Khail”, Hakim-a-Kalan-a-Kunarha kindly gave me accommodations. Mr. Mohammad Ali helped me as an interpreter and assistant. Mr. K. Yamagata, the ambassador to Pakistan, Mr. T. Fukai, Mr. Y. Hachiya, and also Mr. J. Kakoto of Gosho Co. and Mr. T. Uchida gave us many facilities.

I am thankful to Prof. Dr. H. Kihara, the leader of our expedition, Prof. Dr. K. Yamashita and Assistant Prof. S. Nakao for their warm encouragement and help.

For the publication of this volume, I am thankful to Prof. Dr. Joji Ashida, the president of Fauna and Flora Research Society and Mr. T. Nakamura for his advice and Miss H. Kawakita for her assistance.

The expences of the present research and publication were defrayed by the Ministry of Education, for which we wish to express our gratitude.

We also wish to thank the Asahi Newspapers for their kind assistance and encouragement.

Phytogeography of Afghanistan

Climate. The climate of the greater part of Afghanistan is of the Mediterranean type, except the high mountainous eastern part (Nuristan and Safed-Kuh-Morga range) which belongs to the monsoon type.

In the greater part of Afghanistan, the summer is very hot without precipitation. The autumn is arid and the winter is cold and wet, while the spring is rainy. The snow of the high mountains which lie east and west in the middle of Afghanistan, melts in summer, and irrigates the valleys and the oases.

During our journey from May to September, we had only one shower (not heavy) at Kabul, while in Nuristan, we had several rainy days in a month.

The greater part of Afghanistan is desert. This is mainly due to the arid climate and to some extent, caused by human destruction especially by cattle breeding and by gathering fuel. As I have not travelled enough to speak about the vegetation, I shall mention what I observed in the course of my herborization during the dry season.

Subtropical zone (400m–1200m).

There are mountains in the middle. The subtropical zone is around the periphery of this country. In this zone, the vegetation is mainly desert like. The trees are very rare. There are scattered herbs along the roadside (Fig. 1), such as *Peganum Harmala* with white Flax-like flowers, *Zygophyllum Fabago* var. *oxanum* with two fleshy leaflets, *Heliotropium lasiocarpum* and spinous shrubs as *Prosopis Stephaniana* with yellow flowers.

In the irrigated wheat fields, there are many weeds such as *Centaurea depressa*, *Anthemis Cota*, *Carthamus lanatus*, *Convolvulus arvensis*, *Lathyrus aphaca*, *Chenopodium album*, *Polygonum persicaria*, etc. Here and there we found spiny and creeping *Capparis spinosa* with large showy flowers.

In sandy places *Citrullus Colocynthus* was stretching over the ground.

In some places with a little underlying water, spiny dwarf shrubs, namely, *Alphagi sparsiflora* (purple flowered Leguminaceous plant), *Launaea tomentella* (subaphyllous Compositae) form pure communities.

Artemisia maritima is widely distributed from the subtropical zone to the alpine zone, usually covering the mountain slopes on saline soil and forming 1–2m apart from each other, coarse and large pure communities (Wormwood community: Linchewsky and Prozorovsky, Kew Bull., 1949, 188). *Haloxylon salicornicum* is also abundant from the subtropical zone to the temperate zone, on saline soils forming coarse (1–2m apart) and large pure communities.

Other Chenopodiaceous plants forming communities in this zone are *Halocharis violacea*, *Suaeda Salsa* and *Salsola Kali*. Near Kandahar, we were regaled with the

beautiful carpets made of *Halarchon vesiculosus* (Chenop.) with petaloid anther. This is an endemic and monotypic genus of Afghanistan. At Argandab, Kandahar, Jalalabad and Kunduz, in the ponds near the rivers we saw abundant *Typha angustifolia* (Fig. 2) mixed with *Scirpus lacustris*, *S. triqueter*, *S. maritimus* var. *macer* and *Cyperus rotundus*. These communities correspond to the Marsh medium-herbage meadows of Linchev. and Prozorov. The vegetation is dense along water courses (Fig. 3).

The steppe is formed by the following Gramineae: *Sorghum halepense*, *Echinochloa Crus-Galli*, *Lolium loliaceum*, *Pennisetum dichotomum*. *Aeluropus littoralis* on saline soils (Azhrek meadow) and *Cynodon Dactylon* on loess hills are frequently met with.

Near Kunduz I made an excursion to a hill. The vegetation was very sparse (Fig. 4) composed of the following grasses and herbs: *Hordeum leporinum*, *Diarrhizon vesiculosum*, *Phlomis Olgae*, *Heliotropium lasiocarpum* and *Peganum Harmala*.

In Jalalabad (circ. 500m), larger shrubs, spiny *Acacia modesta* and juicy *Calotropis procera* were characteristic. On rocky places near Jalalabad we saw peculiar shrubs: Solanaceous *Withania coagrans* and Apocynaceous *Rhazia stricta* with thick leaves and long capsules.

In the subtropical zone where water is available in summer, rice, wheat, cotton, and melons are extensively cultivated. Pomegranate is abundantly planted in Kandahar. Grapes are also cultivated. The street trees are irrigated; they are *Morus alba*, *Salix babylonica*, *Schinus Molle* and *Platanus orientalis*. *Pinus halepensis*, *Cupress sempervirens* and *Thuja orientalis* are cultivated in the gardens.

In Jalalabad, we saw *Ficus religiosa* (Fig. 5), *Ficus bengalensis*, *Cedrela Toona* and *Schinus Molle* planted as street trees, and *Phaenix dactylifera* (Fig. 6) and *Citrus aurantiacus* (Fig. 7) cultivated in the gardens.

Warm temperate zone (1200m–2400m).

This zone occupies the inner concentric area between the peripheral subtropical zone and the central cold temperate zone (2400m–3600m.).

The boundaries of these zones are not clear, for there are no characteristic tree indicating the zonation. As the height of the land increases, the vegetation becomes gradually richer. The plants are benefited by mist and dew. Where there is more moisture due to topographical reason, *Pistacia vera* is scattered (*Pistachio* communities). The trees are low (3–5m), and have hemispherical crowns. These communities extensively develop in Tadzhikistan (according to Linch. and Proz., l. c. 206). We passed such places between Pulikhumri and Haibak. There was also meadow-like vegetation composed of many species. Some of them are new to science. In these mixed herb communities, there were *Convolvulus subhirsutus* with divaricate strict branches, *Malva rhyticarpa* with beautiful purple flowers, white flowered *Eremulus Olgae* and yellow flowered *E. angustifolius* (Fig. 8), *Delphinium Zalil*, *Consolida*

rugulosa, *Arnebia Griffithii* with yellow corolla tinged with brown at the throat, *Plagiobasis sogdiana* new to Afghanistan, *Aster altaicus*, *Aphanopleura leptoclada* (Umbelliferae), *Psoralea drupacea* (Leguminosae), *Cephalorrhizum oopodum* (Plumbaginaceae), *Cousinia microcarpa*, *C. Olgae*, *C. Gillii*, *C. bipinnata*, *Astragalus Alopecias*, *A. elatior* n. sp., *A. patentivillosus* n. sp., *Chrysanthemum chrysostachys*, *C. floccosum* n. sp. etc. Most of these species are also found in Russian Turkestan and may be called as Central Asiatic elements.

In Pagman near Kabul, I saw such meadow-like vegetation composed of various other species, namely, Boraginaceous *Adenocaryum anchusoides*, *Cynoglossum glochidiatum*, *Macrotomia speciosa*, and tall Umbelliferous *Prangos pubularia* with curious large white mericarps, etc.

There was also between Pulikhumri and Haibak, a very large meadow-like vegetation dominated by *Aegylops squarrosa* (Fig. 9) and *Hordeum leporinum* mixed with *Aegylops triuncialis* and a few *E. crassa*, *Cousinias* (Fig. 10), *Convolvulus subhirsutus* (Fig. 11) and *Eremurus Olgae*, (*Aegylops* communities according to Linch. and Proz. in Kew Bull. 1949: 194). These communities are typical of Southern Tadzhikistan (above 1200m).

In the more arid places, the number of species is fewer and sometimes pure course associations were observed.

Here and there on saline soils, *Artemisia maritima* covered the hill side slopes (Wormwood communities) and *Haloxylon multiflorum* or *H. salicornicum* occupied the solonchak depressions of plains (Saxaul communities).

Along roadside in these dried areas, I saw *Tribulus terrestris*, *Zygophyllum Fabago* var. *oxanum*, Chenopodiaceous *Panderia pilosa*, *Kochia odontoptera*, *Salsola foetida*, *Atriplex repens*, *Halocharis violacea*, and *H. hispida* and other herbs.

On the way from Kalat-i-Ghilzai to Aghangai, (Kandahar-Kabul), I stopped the motorcar and observed the following vegetation (Fig. 12): *Artemisia maritima* and *Launaea tomentella* were dominant, mixed with *Linaria odora* with narrow leaves, *Peganum Halmala*, *Othonnopsis intermedia* with thick leaves, and *Astragalus Schurabicus* with strong spinous petioles. Thus the number of the species is small. The individuals are apart from each other by 1-2m.

In wet places or temporary lake basins (in the west of Kabul, for example), the sedge meadows develop. *Scirpus strobilinus*, *S. vulpinicolor* n. sp., *Eleocharis transcaucasica*, *Carex pseudofetida* and *Juncus jaxarticus* are the members of Sedge meadows.

Around wet places on saline soils i. e. solonchak, Chenopodiaceous herbs (*Suaeda Salsa*, *S. heterophylla* and *Atriplex hastatum* var. *salinum*) were found (Fig. 13).

Along riversides we saw sporadically small communities of spinous trees, namely, *Elaeagnus angustifolia*, *Punica Granatum* on gravelly ground, *Ficus Carica* var. *Johannis*. Along the Bamian River (Fig. 14), we saw *Platanus orientalis*, *Pistacia*

mutica, *Colutea Paulseni*, and shrubs (Scrub communities): *Hippophae rhamnoides*, *Lycium ruthenicum*, *Rosa Beggeriana* (Afghan rose), *Myricaria germanica* subsp. *alopeculoides*, and *Nitraria Schoeberi* with full of white flowers. *Tamarix pentandra* and *T. leptostachys* often formed large pure associations along rivers, or on grounds with underlying water.

Stepping stone. In the small area with adequate constant water supply (we saw such a place between Siyagird and Charikar for example), there were many temperate species of trees, shrubs and mesophytic herbs. There I found *Crataegus songarica*, *Spiraea Brauhia* var. *glaucophylla*, *Lonicera arborea* var. *persica*, *Celtis caucasica*, *Ficus palmata*, *Rosa Beggeriana* and mesophytic herbs such as *Campanula stricta* n. sp., *Erythraea Centaurium*, *Datisca cannabina*, *Adenocaryum anchusoides* and even a fern, *Adiantum capillus-veneris*.

Thus the place acts as a stepping stone of the distribution of mesophytic plants through the corridor of the mountain chains.

Where there is adequate moisture, wheat is sown in November and cultivated without irrigation. grapes and melons (Fig. 15, 16) are extensively cultivated. apples, apricots, plums, cherries, walnuts and mulberries are also cultivated. The leaves of *Nicotiana rusticana* are smoked through water in Afghanistan. The plants are found in the fields (Fig. 17).

Populus nigra var. *italica* is widely cultivated by irrigation for timber.

The street trees in Kabul are *Ulmus campestris*, *Platanus orientalis*, *Morus alba*, and *Salix babylonica*. They are cultivated by irrigation.

Cold temperate zone (2400m–3600m).

This zone occupies the middle part of Afghanistan. Benefited by dew and mist, and placed near the melting snow, the vegetation is richer, but generally not so dense. Trees are very rare.

In the lower parts, we saw scattered *Ferula diversivittata*, a very tall monocarpic Umbelliferae with large mericarps, sometimes forming large pure communities between Shibar Pass and Chardeh Chorband Valley and sporadically in Lataband Pass.

There were also communities of *Artemisia maritima* on high mountain slopes. By the roadside *Peganum Harmala* was abundant.

In Lataband Pass, mountain meadows were frequently seen. *Perowskia atriplicifolia* (Labiateae), *Nepeta juncea* (Lab.), *Salvia bucharica* (Lab.) and *Poterium polygamum* (Rosaceae) were the members of the meadows. On rocky places caespitose grass steppes were composed of *Melica inaequiglumis*, *Chloris villosa*, *Andrachne rotundifolia* (Euphorbiaceae), *Gaillonia eriantha* (Rubiaceae), *Macrotomia afghanica* n. sp. (Boraginaceae), *Mattiastrium Dielsii* (Bor.), *Trichodesma incana* var. *stricta* (Bor.), *Heliotropium cabulicum* (Bor.), *Convolvulus gonocladus* subsp. *pyrrhotrichus*. These herbs were 1–2m apart from each other.

In Shibar Pass (3200m), the number of species is larger.

In the caespitose grass steppes, *Festuca elotior*, *Agrostis semiverticillata*, *Polygonum afghanum*, *Artemisia Turczaninowiana* var. *dasyantha*, *Trigonella Griffithii*, *Astragalus suffalcatus* (abundant), *A. neo-albovillosus* n. sp., *A. lasioseminus*, *Lotus corniculatus*, *Vicia villosa* and *Thalictrum minus* var. *olympicum* were collected.

In the mountain meadows *Carum Carvi* and *Veronica campylopoda* were collected.

Along rivulets, the vegetation is denser. *Salix* sp. and *Populus nigra* var. *italica* are cultivated. *Juglans regia* subsp. *fallax* is well grown (cultivated) in this zone.

We were very much interested to see wheat fields near the top of this pass (3200m), though the plants were not well grown.

Nuristan.

The vegetation of Nuristan and the Safed-Kuh-Morga range in the eastern part of Afghanistan, is different from the greater part of Afghanistan. The climate is of the monsoon type, though not so typical as that of Eastern Asia is. The timber line of Nuristan lies at an altitude of about 3000m above sea-level, while that of Japan lies at about 2300m, though these two are situated in the same latitude. This is because the climate of Japan is more humid.

The vegetation is most luxuriant in the cold temperate zone in Nuristan.

Subtropical zone (Chaga-sarai 820m—Gossalik 1020m).

Along the Pech River, the vegetation is sparse and composed of dwarf shrubs (Scrub communities), namely, *Dodonaea viscosa*, *Daphne mucronata* var. *afghanica*, and *Nerium indicum* var. *Kotschyi* (Shrub 1–2m high with rosy flowers), or composed of herbs and grasses of Afghan subtropical zone. *Cannabis sativa* was abundant near Chaga-sarai. This species is wild in this zone. Here and there on the mountain slopes, pure communities of *Artemisia maritima* were observed (Fig. 18).

At Kandai (990m), *Punica Granatum* (Pomegranate Communities), *Zizyphus Jujuba* were growing on the stony terraces along the rivers. Along ridges between the fields, or on rubbly soils, *Rumex hastatus* was dominant. There were also *Cirsium Griffithii* var. *crassispinum*, *Erigeron candidissimus*, *Aster altaicus*, *Potentilla reptans* and *Bupleurum subuniflorum*. Among others, *Conyza japonica* and *Lespedeza juncea* which are also found in Eastern Asia reminded me of the vegetation of Japan.

Rice, wheat, melon and water-melon are cultivated in this zone.

Warm temperate zone (Gossalik 1020m—2000m).

The sclerophyllous formation prevails in this zone. From Chaga-sarai to Kandai, the mountain slopes facing to the south-east, were covered by trees. The dominant tree was *Quercus Baloot*, vicariant of *Q. Ilex* of the Mediterranean region, with spiny coriaceous leaves (oak woods) (Fig. 19, 20). From about 1020m *Q. Baloot* appeared sparsely as dwarf shrubs and increased in number and size as we went upwards.

In the lower parts of this zone, *Olea cuspidata*, *Pistacia Kinjuk* (not *P. mutica* = *P. cabulica*), *Ficus palmata*, *Zizyphus Jujuba* and *Punica Granatum* were mixed

with *Q. Baloot*.

The scrub communities were growing among rocks, and were composed of *Sageretia theezans* (var. *glabrescens*), which is also found in Eastern Asia, *Daphne mucronata* var. *affghanica*, *Indigofera Gerardiana*, *Cotoneaster racemiflora* var. *subuni-flora* and var. *hissarica*.

As we went up the Pech River the vegetation grew denser and the number of species increased. Near the junctions where the rivulets joined the main river, the vegetation was especially dense. The Himalayan elements appeared. Scrub communities formed by *Spiraea tomentosa*, *Rosa Webbiana*, both of which are also distributed in Himalayas and *Spiraea Brauhia* vars. were abundant.

In Voma (1380m), apricots and walnuts (*Juglans regia* subsp. *fallax*) are planted. The cereals are wheat, barley, maize, *Sorgum bicolor* var. *Ardinii*, *Setaria italica* and *Panicum miliaceum*. The legumes are *Vigna sinensis*, *Phaseolus vulgaris* and *Glycine Max* with adpressed seeds. The villages are situated at altitudes of about 300m–400m above the Pech River (1380m) probably to avoid the troublesome sandflies attacking human skin. Here the fields are cultivated by women.

Near the rivers, dense meadows are formed by the following herbs: *Polygonum nepalense*, *Geranium sibiricum*, *Impatiens brachycentra*, *I. Lemanni*, *Codonopsis clematidea* var. *obtusata* (dominant), *Clematis Vitalba* var. *syriaca*, *Myriactis Wallichii*, and *Astragalus Grahamianus*. *Artemisia japonica* is common to Eastern Asia. In the drier places, Gramineae i.e., *Saccharum spontaneum*, *Chrysopogon Gryllus*, *Pennisetum flaccidum*, *Apluda mutica* var. *aristata* and *Thyrsia viridula* n. sp. are seen through both warm and cold temperate zones. *Codonopsis clematidea* var. *obtusata* sometimes forms pure communities on wet sandy soils near the river. *Ferula Jaeschkiana*, a tall Umbellifer and *Astragalus terrestris* n. sp., *Scorzonera nuristanica* n. sp. are distributed through Nuristan.

On rocks caespitose drought-resistant herbs were growing: *Bupleurum Gilesii*, *Campanula Kiharae* n. sp., *C. trista* n. sp., *Erigeron himalayense*, *Astragalus Grahamianus*, *Cousinia Haeckeliae* and *Viola serpens*, etc. *Saussurea amplifolia* was growing on rocks under tall trees.

In some humid environments, large rocks were almost covered over by mosses (Fig. 21). A few ferns, *Dryopteris austriaca*, *Ceterach officinarum* and *Cheilanthes persica*, were collected.

In the upper part of this zone (Fig. 22), Himalayan *Cedrus Deodara* and deciduous trees such as Himalayan *Viburnum cotinifolium* with red fruits, *Acer pubescens*, vicariant of Mediterranean *A. monspessulanum*, and *Juglans regia* subsp. *fallax* appeared. Himalayan *Jasminum revolutum*, an evergreen tall shrub, was growing.

Cold temperate zone (2000m—3000m).

The coniferous formation prevails in this zone. Coniferous forests with a mixture of deciduous trees were usually seen in the lower parts of this zone (Fig. 23).

The pure coniferous forests were in the upper parts.

Pinus Griffithii of Western Himalaya appears from 2000m. There were still *Quercus Baloot*, but the number of individuals diminished. Here the dominant tree is *Cedrus Deodara* (Cedar forest). The deciduous trees are *Acer cappadocicum* var. *indicum* and *Celtis caucasica*. Near Chatrass (2090m), the vegetation is richest, and the number of species is large.

The scrub communities are composed of Himalayan elements: *Prunus Jaque-montii*, *Rosa Webbiana* and *Rhododendron Colletianum* which is the only representative of *Rhododendron* in Nuristan. *Crataegus songarica*, *Spiraea Brahuica* var., *Cotoneaster racemiflora* var. *suavis* and var. *hissarica* also form scrub communities.

As the undergrowth of these forests, herbaceous thickets were seen in humid places. The members of these thickets were *Rumex orientalis*, *Geum urbanum*, *Senecio hindukusensis* n. sp., *Circaea alpina* subsp. *imaicola* var. *himalaica*, *Vicia rigidula*, *Scrophularia alata*, *Rubia cordifolia* var. *Munjista*, and *Lactuca nuristanica* n. sp.

In the meadows near the rivers, *Caltha palustris* var. *alpina*, *Delphinium nuristanicum* n. sp., *D. tenuipes* n. sp., *Pedicularis coeruleo-albescens* (Fig. 24), *P. punctata*, *Euphrasia himalayica* (Fig. 25), *Parnassia Laxmanni* (Fig. 26) and *Gentiana umbellata* were the members. Sometimes carpets made of a single species (pure communities) were seen.

In crevices of rocks, *Chrysanthemum Griffithii*, *Artemisia persica*, *Sedum adnigrum* (in shady places), *Potentilla Gerardiana*, and *Pertya Mattefeldii*: a representative of Eastern Asiatic genus, and *Brachyactis Roylei* were growing.

By the roadside Sino-Japanese *Thymus Serphyllum* subsp. *quinquecostatus* (Fig. 27), Himalayan *Dipsacus mitis*, *Agrostis palustris*, *Minuartia lineata*, *Astragalus graveolens* and *A. hindukushiensis* were found.

In arid and open environments, caespitose grass communities were composed of *Festuca gigantea*, *Pennisetum lanatum*, *Bromus tectorum* and *Oryzopsis mollinioides*.

At the height of about 2200m, *Quercus Baloot* disappeared and *Cedrus Deodara* and *Pinus Griffithii* were dominant (Cedar-Pine forest). Next, *Pinus Gerardiana* and *Picea Smithiana* appeared. They were mixed with deciduous trees, namely, *Fraxinus raibocarpa*, *F. xanthoxyloides*, *Corylus Colurna* and *Ulmus campestris*. The forests were very dense.

Prunus Armeniaca and *Malus pumila* were growing along the Pech River. Vavilov considered them to be wild (Linch. et Proz. mentioned *Prunus Armeniaca* = *Amygdalis bucharica* is wild in Pamiro-Alai), but I think they have been naturalized.

In open places there were *Populus pamirica*, *Salix* sp. and *Juglans regia* subsp. *fallax* (Walnut-Poplar wood).

The scrub communities were formed of *Cotoneaster racemiflora* var. *suavis*, *C. Lindleyi*, *Ribes orientale* and *Rubus caesius*.

The spinous herbs *Morinia persica* with beautiful flowers (Fig. 28) and *Cirsium Wallichii* var. *glabratum* were found along the roadside and seemed rather curious.

Near Pushuki, the river bed was wide and the road ascended gradually. In open flat places beautiful meadows were composed of tall herbs: *Filipendula vestita* (Fig. 29), *Ligusticum elatum*, *Bunium persicum*, etc. Along the roadside *Solidago Virgaurea* and *Fragaria vesca* were collected.

At Pushuki (2280m), wheat, barley, maize, *Setaria italica*, *Panicum miliaceum*, *Pisum arvense* were cultivated.

In open places, the mountain meadows were composed of Himalayan *Podophyllum* *Emodi*, *Inula racemosa*, *Caltha palustris* var. *alpina*, *Oxyria digyna*, *Chamaenerion lineare*, *Gentiana pseudoaquatica*, *Lomatogonium carinthiaca* and *Hieracium umbellatum*. Along the roadside, *Pinus Griffithii* (Fig. 30) was dominant (Himalayan-pine forest). The other trees were *Cedrus Deodara*, *Picea Smithiana*, *Salix alba*, *Juglans regia* subsp. *fallax*, *Populus pamirica*, *Sorbus lanata*, *Corylus Coluruna*, *Betula Jacquemontii*, *Ulmus glabra* and *Viburnum cotinifolium*.

The shrubs were *Lonicera arborea* var. *persica*, *Ribes orientale*, *Rhamnus minuta*, *Caragana afghanica* n. sp., and *Prunus Jacquemontii* var. *bifrons*.

The herbs were *Ferula Jaeschkiana*, *Chaerophyllum villosum*, *C. reflexum*, *Angelica nuristanica* n. sp., *Ligusticum elatum*, *Phleum commutatum*, and *Sedum Ewersii* (on rocks).

At the height of about 2410m, there was no *Cedrus Deodara*. The forest was not so dense. *Pinus Gerardiana* was dominant (Gerard's-pine forest). *Pinus Griffithii* and deciduous trees including *Sorbus lanata*, *Juglans regia* subsp. *fallax*, etc. were seen.

Eschtaway (2540m) is the highest village in this valley. Here the cultivated plants were barley (main crop), wheat, *Panicum miliaceum*, and *Pisum arvense*. Around the cultivated fields among gravels, *Polygonatum verticillatum* was abundant.

Near Eschtaway, along the Pech River, broad swamps were developed. These swamps were covered by the sedgeherb meadow in which the caespitose *Scirpus Caricis*, *Cobresia laxa* were predominant and herbs such as *Rumex acetosa*, *Oxyria digyna*, *Swertia Kiharae* n. sp., *Geranium* sp. etc. were found.

Along the roadside herbaceous plants such as *Silene Cucubalus*, *S. Griffithii*, *Rumex nepalensis*, *Artemisia Turczaninowiana* var. *dasyantha* (Fig. 31), *Cousinia* sp., *Astragalus terrestris*, *Strogonovia pubescens* n. sp., *Thysia viridula*, *Brachyactis pubescens*, *Alopecurus glaucus* and *Calamagrostis pseudophragmites* were dominant.

As we got near the Prun Pass (the name of this valley is Shabul Gul), the slope became very steep.

In this valley the timber line lies at about 2700m above sea-level. The timber line of Nuristan lies at about 3000m (2700-3350m). The last member was *Pinus Gerardiana*, though there was *Betula Jacquemontii* near Pushuki which is reported as

the last member in Himalaya.

Alpine zone (3000m upwards).

Shrub zone.

Among rocks scrub communities were well developed. *Juniperus communis* var. *saxatilis* was rather tall (2–3m) in the lower parts of this zone.

Lonicera Semenovii var. *nuristanica*, *Prunus Jacquemontii* var. *bifrons* and *Salix* sp. were forming thickets. In dried places, *Ephedra major* var. *procera* was forming large pure associations (Fig. 32). It reminded me of *Pinus pumila* associations of the Japanese alpine zone. Along the torrents *Rosa Webbiana* and *Polygonum glaberrimum* n. sp. were making dense thickets. *Rheum tibeticum* with yellow green flowers (Fig. 33), *Artemisia Turczaninoviana* var. *dasyantha*, *Ferula Jaeschkiana* and *Eremostachys speciosa* var. *bipinnatifida* were growing among stones. *Tragacanth* communities were composed of *Acantholimon nuristanicum* n. sp. making round cushions (Fig. 34), and *Astragali* well developed. *A. confertissimum* n. sp., *A. spinifer*, *A. supraglaber* n. sp., and *A. nuristanicus* n. sp. were collected.

Herb zone.

Alpine meadows were well developed. In wet places, there were mixed-herbage meadows with very dwarfed herbs namely *Primula Warshenewskiana* subsp. *rhodantha* (Fig. 35), *Ranunculus glabellus*, *Juncus membranaceus* and *Alopecurus gracialis*. In drier places mixed herbage meadows were composed of *Polygonum affine* (dominant) (Fig. 36), *Anphalis contorta*, *A. nepalensis*, *Shibbaldia cuneata*, *Potentilla sericea*, *P. multifida*, *P. bifurcata*, *Sedum nuristanicum* n. sp., *Astragalus Jabbor-Khailii* n. sp., *Cerastium ceratoides* (Fig. 37) and *Psathyrostachys Kronburgii*. In this region, *Juniperus Seravschanica* was depressed and covering the ground by its dense branches (Fig. 38).

Cousinia Trolii was abundant near the top of the Pass (Alpine *Cousinia* communities) (Fig. 39, 40). In Pamiro-Alai these communities of *Cousinia* are widespread on rubbly soils above 3200m–3500m.

Floristic analysis.

Cosmopolitan plants. The cosmopolitan plants are *Sonchus oleraceus*, *Taraxacum officinale*, *Erigeron canadensis*, *E. sumatrensis*, *Solanum nigrum*, *Euphorbia Helioscopia*, *Portulaca oleracea*, *Stellaria media*, *Polygonum aviculare*, *Capsella Bursa-pastoris*, *Setaria viridis*, *Poa annua*, *Echinochloa Crus-galli*, *Cynodon Dactylon*, etc. Most of them had been naturalized by human agency from very ancient times, except two *Erigerons* of American origin. These must be excluded from the local floristic discussion.

The plants distributed through the northern hemisphere are, in the alpine zone, *Chamaenerion lineare*, *Polygonum viviparum*, *P. amphibium*, *Oxyria digyna* etc.; in the temperate zone, *Hieracium umbellatum*, *Lippia nodiflora*, *Glaux maritima*, *Myriophyllum verticillatum*, *M. spicatum*, *Rorippa islandica*, *Caltha palustris*, *Cheno-*

podium Botrys, Triglochin maritimum, T. palustre etc.

The pantropic plants. Most of them had been naturalized by the equatorial navigations since the 16th century.

The Eurasiatic plants. The plants distributed widely from the Western Europe to the Eastern Asia are numerous. They are monotypical or often represented by several vicarious subspecies, e.g. Picris hieracioides, Solidago Virgaurea, Prunella vulgaris, Trachomitum venetum, Thymus Serphyllus, Lotus corniculatus etc.

In several cases, the boundaries of these vicariants lie in Afghanistan. Lotus corniculatus var. corniculatus is found westwards from the Shibar Pass, while var. japonicus is distributed eastwards from the Shibar Pass to Japan. Thymus Serphyllum subsp. quinquecostatus is found eastwards from Nuristan to Japan, while in the greater part of Afghanistan the genus Thymus is represented by another species.

Western elements. In Afghanistan, there are many plants which are also found in the western parts of the Eurasiatic continent. Some of them extend to the whole Europe and Western Siberia, and others are distributed in the Mediterranean region in the broad sense. The former are distributed in Afghanistan in the cold and warm temperate zones, while the latter are mainly in warm temperate zones.

Besides these, there are some plants which are distributed from the tropical or subtropical zones of Africa to the subtropical zone of Afghanistan.

Central Asiatic elements. There are a considerable number of temperate species which are found chiefly and ubiquitously in Central Asia (including Afghanistan, Iran, and Russian Turkestan), and some of them extend to Mongolia.

I was very much interested to see Lactuca tatarica and Centaurea repens which are ubiquitous in Central Asia and Mongolia. As they show no noticeable variation I consider that they were distributed by the nomads or caravans from Central Asia to Mongolia. There are many alpine plants distributed widely along mountain chains, over Altai, Tianshan, Pamir, Hindukush, Himalaya, Tibet, and South West China (some plants extend to alpine Formosa).

The Western and Central Asiatic elements have immigrated along Hindukush and Himalayan mountain chains to the East.

Eastern elements. In the eastern part of Afghanistan, there are many species which are also distributed in the cold and the warm temperate Himalayas. Some of them extend to China. These are the members of the Sino-Japanese region.

In the subtropical zone of the eastern part of Afghanistan, there are some species which are found from Afghanistan to subtropical or tropical Eastern Asia, and are in some cases found also in Australia.

The eastern temperate elements have immigrated along Himalaya and Hindukush mountain chains to the west.

Thus the Himalaya and Hindukush mountain chains have been the corridors for

the migration of temperate plants.

Endemics. There are many endemic species in Afghanistan, while endemic genera are few. (Halarchon and others).

Generally speaking, the families which are supposed to be most advanced in their respective orders have many endemics: Compositae of Campanulales, Leguminosae of Rosales, Labiatae of Tubiflorae, Cruciferae of Rhoeadales. These are the plant groups which have changed greatly in their evolutionary histories.

The changeable groups produced many species rather recently. And these species are considered as young endemics.

Relative numbers of the higher categories.

Ferns are few. The rarity is due to the arid climate.

Gymnosperms are represented by 14 species and are mainly Himalayan, and some of them are found in China.

In the greater part of Afghanistan, the climate is too arid for the distribution of tall trees. The Himalayan members immigrated rather recently, and have not changed in the new habitats.

Monocotyledons are few. They are represented by 397 species, including 165 species of the Gramineae which are well represented and are the most advanced family of the anemophyllous are also well represented.

The Orchidaceae which are the most advanced family of the entomophyllous Monocotyledons have many genera and the species in the adjacent land, India, are very poorly represented, because of the aridity.

Other Monocotyledons which are mainly either hygrophyllous or old primitive groups are few in Afghan flora.

Among Dicotyledons, Choripetalae, the assemblages of the orders with free petals are represented by 1254 species and not so well developed as compared with Sympetalae, the assemblages of the orders with united petals. The latter are represented by 1015 species.

Comparison between the Afghan flora and the Japanese flora.

Number of species compared

	Afghanistan	Japan		Afghanistan	Japan
Gymnospermae	14	39	Composite	432	360
Monocotyledoneae	397	1140	Leguminosae	346	97
Choripetalae	1254	1839	Cruciferae	188	65
Sympetalae	1015	629	Labiatae	160	86
Total	2680	3647	Gramineae	165	231

Afghanistan 635000 sq. km. Japan 369665 sq. km.

Japan has many endemic species, most of them being old endemics.

Ferns are numerous, and owing to the humid climate from very ancient times,

they have considerable endemic species.

Gymnosperms are well represented by 39 species including the well-known old endemics of the tertiary period such as *Sciadopytis verticillata*, *Pseudotsuga japonica*.

Monocotyledons are numerous (1140 species) with endemic genera and species. Gramineae (231 species) is not so well represented as compared with other families.

Among Dicotyledons, Choripetalae are well represented with 1839 species. Sym-petalae are not so well developed and are represented with 629 species. The Chori-petalae have several well-known endemic families, Trochodendraceae, Euptelaeaceae, Cercidiphyllaceae (also in China), Stachyuraceae (also in China), many endemic genera and copious old endemic species.

The young endemic species are also considerable in number. These were created from many conserved genera by the topographical isolation (high mountains) or by the edaphic segregations (new volcanos with destroyed vegetations, sea shores, serpentine areas, limestone areas etc.).

Thus Japanese flora preserves many comparatively primitive (old) groups and some young endemics, while Afghan flora has few primitive groups and many new races which have changed from advanced groups.

Japan is surrounded by the Pacific Ocean, and it was formerly connected to the Asiatic continents, but the eastern part was usually under the oceanic climate.

There were high mountains and the vertical immigration was made possible. Moreover, the central high mountains extended north and south, so that immigration in this direction was made possible.

The climatic changes since the tertiary period were not so great as in the western countries. There were many volcanic eruptions, which destroyed the climax vegetations, and afforded refuges for some light-loving (heliophyllous,) plants. Thus Japan has conserved many old endemics. Afghanistan became arid recently, and many hygrophyllous plants could no more exist there. So in this area, many young endemics were created from the most changeable groups that had invaded from the surrounding lands without competing with the old endemics.

Even in Nuristan, where the climate is of the monsoon type, trees are few, and many of them immigrated from the east rather recently.

Nuristan and Safed-Kuh-Morga ranges are isolated from each other by the sub-tropical region of the Kabul River Valley.

Both are separated from the Western Himalaya by the Indus River. So there are considerable young endemics in both areas.

I may conclude that the present environment of Afghanistan was formed rather recently, and the Afghan flora is young.



Fig. 1. 15 km east from Kandahar. June 6, 1955.
Subtropical zone.



Fig. 2. Near Kunduz at a pond. July 7, 1955.
Subtropical zone; Association of *Typha angustifolia*.



Fig. 3. Near Kalat-us-Siraj. June 16, 1955.
Subtropical zone; Association of *Ranunculus laetus* along a stream.



Fig. 4. Near Kunduz July 8, 1955.
Subtropical zone; *Hordeum leporinum*, *Diarrhizon vesiculosum*, *Phlomis* Olgae, *Heliotropium lasiocarpum* and *Peganum Harmala* were found.

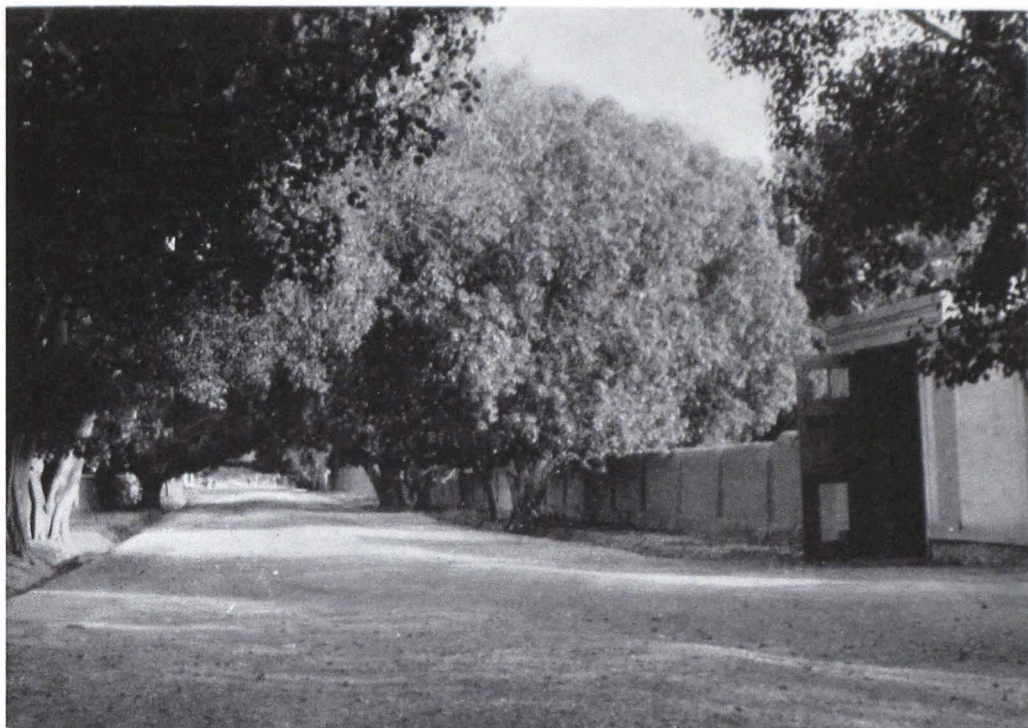


Fig. 5. Jalalabad. Aug. 19, 1955.
Subtropical zone; *Ficus religiosa* planted as street-trees.



Fig. 6. Jalalabad in a garden. Aug. 19, 1955.
Subtropical zone; *Phoenix dactylifera* cultivated.



Fig. 7. Jalalabad in a garden. Aug. 19, 1955.
Subtropical zone; *Citrus aurantiacum* cultivated.

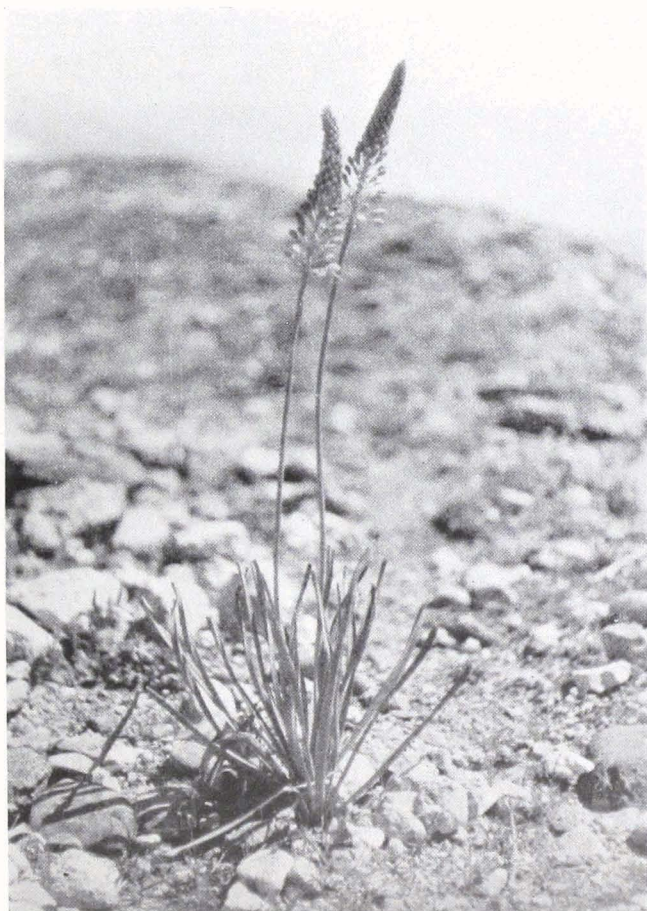


Fig. 8. Between Ghazni and Kabul. June 7, 1955.
Warm temperate zone; *Eremurus stenophyllum* Baker.



Fig. 9. Between Pulikhumri and Haibak. June 27, 1955.
Warm temperate zone; Association of *Aegylops squarrosa*.



Fig. 10. Between Pulikhumri and Haibak. June 27, 1955.
Warm temperate zone; *Aegylops* community composed mainly
of *Aegylops squarrosa* and *Cousinias*.



Fig. 11. Between Pulikhumri and Haibak. June 27, 1955. Warm temperate zone; *Aegylops* community composed of *Aegylops squarrosa* and *Convolvulus subhirsutus*.

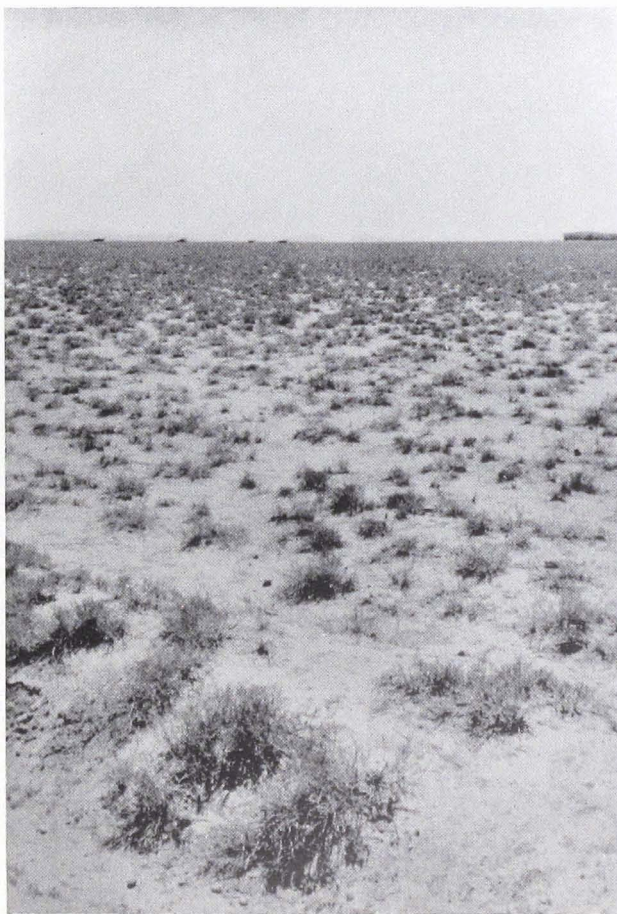


Fig. 12. Between Kalat-i-Ghilzai and Aghangai. June 10, 1955. Warm temperate zone; Association of *Artemisia maritima* and *Launaea tomentella*.

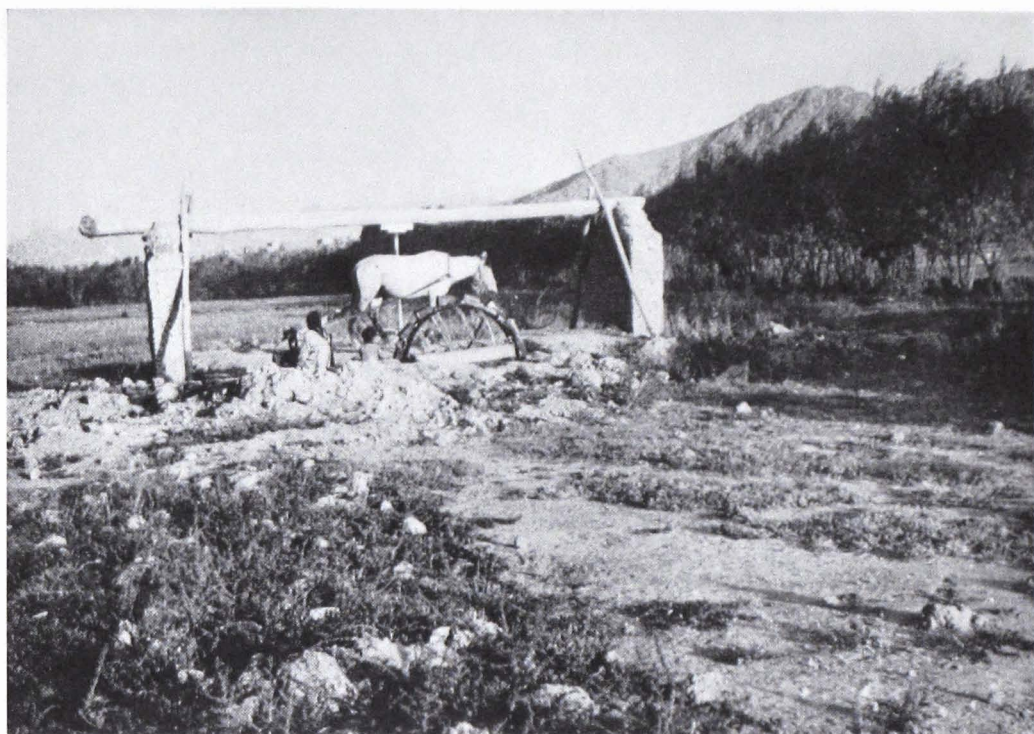


Fig. 13. Near Kabul. July 14, 1955.
Warm temperate zone; Chenopodiaceous plants on solonchak
around a well.



Fig. 14. Doab. July 10, 1955.
Warm temperate zone; Vegetation along Bamian River.

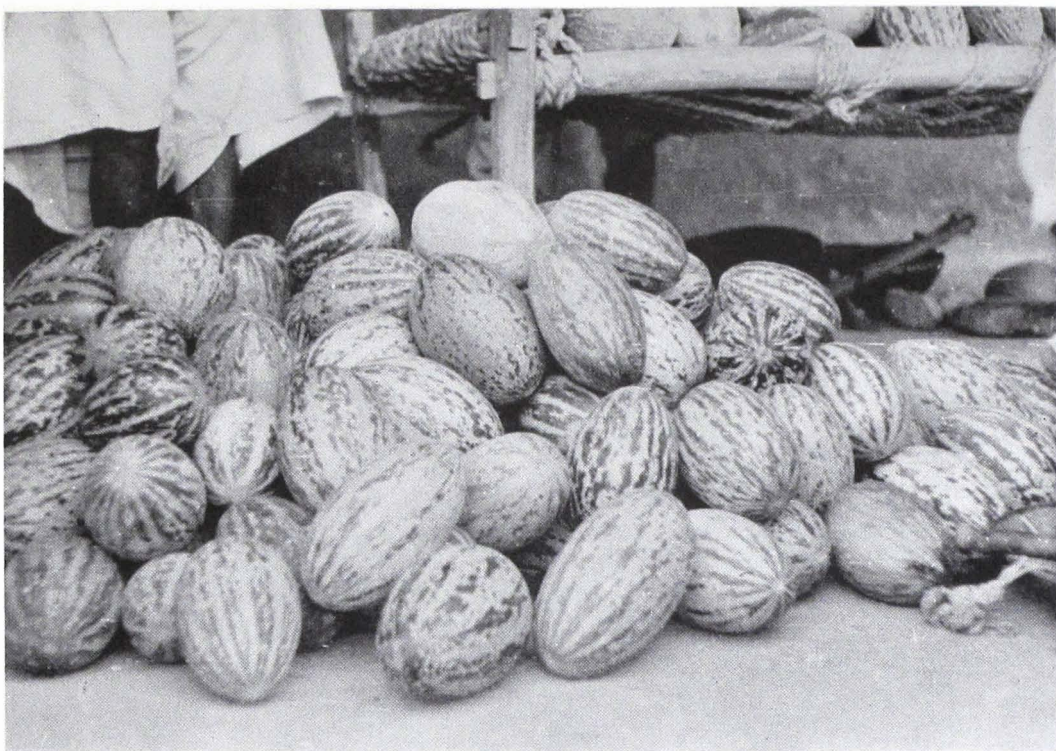


Fig. 15. Between Jalalabad and Sarobi, at a resting house (Chai-Hana). June 17, 1955.
Warm temperate zone; Fruits of Cucumis Melo.



Fig. 16. Zerni. Aug. 25, 1955.
Warm temperate zone; Cucumis Melo cultivated.



Fig. 17. Mulla Olla. Aug. 9, 1955.
Warm temperate zone; *Nicotiana rusticana* cultivated.



Fig. 18. Nuristan: Between Kandai and Gossalik. July 28, 1955.
Subtropical zone; Association of *Artemisia maritima*.



Fig. 19. Nuristan : Between Seprigal and Voma. July 28, 1955.
Warm temperate zone ; Association of *Quercus Baloot*.



Fig. 20. Nuristan : Voma. July 30, 1955.
Warm temperate zone : A trunk of *Quercus Baloot*.

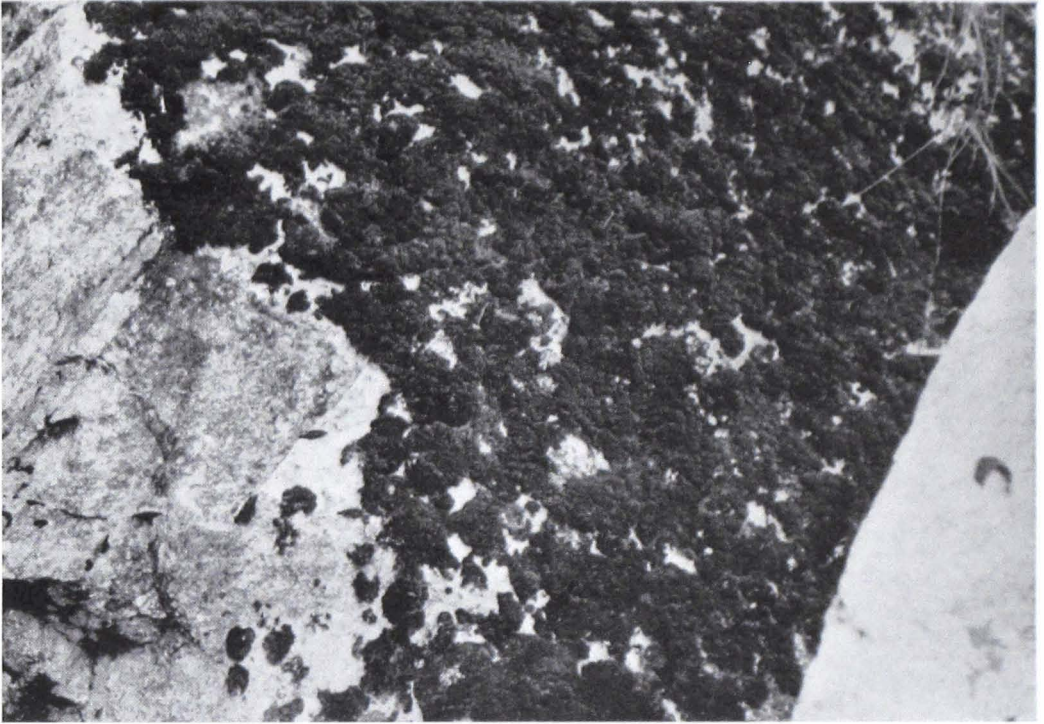


Fig. 21. Nuristan : Between Seprigal and Voma. July 29, 1955.
Warm temperate zone ; A rock covered with Mosses.



Fig. 22. Nuristan : Between Trokikorl and Pawata. August 1, 1955.
Warm temperate zone ; Association of *Cedrus Deodara*.



Fig. 23. Nuristan: Between Chatrass and Kushimaicot. August 2, 1955.
Cold temperate zone; A dense forest of *Pinus Griffithii* and deciduous trees.



Fig. 24. Nuristan: Between Kushimaicot and Pushuki. August 3, 1955.
Cold temperate zone; Association of *Pedicularis caeruleo-albescens*.



Fig. 25. Nuristan : Near Pushuki. August 8, 1955.
Cold temperate zone; Association of *Euphrasia himalayica* near
a riverbed of the Pech River.



Fig. 26. Nuristan : Near Pushuki. August 8, 1955.
Cold temperate zone; Association of *Parnassia Laxmanni*.



Fig. 27. Nuristan: Between Chatrass and Kushimaicot. August 2, 1955.
Cold temperate zone; Association of *Thymus Serpyllum* subsp. *quinquecostatus*
by the roadside.



Fig. 28. Nuristan: Between Chatrass and Kushimaicot. August 2, 1955.
Cold temperate zone; *Morinia persica* along the roadside.



Fig. 29. Nuristan : Between Kushimaicot and Pushuki. August 8, 1955.
Cold temperate zone : Association of *Filipendula vestita*.



Fig. 30. Nuristan : Near Pushuki. August 4, 1955.
Cold temperate zone ; *Pinus Griffithii* with pendulous cones.
The plant was deformed by wind along the valley.



Fig. 31. Nuristan: Between Kushitaki and Pronz. August 6, 1955.
Cold temperate zone; *Artemisia Turczaninoviana* var. *dasyantha*.



Fig. 32. Nuristan: Shabul Gul. August 5, 1955.
Alpine zone: Association of *Ephedra major* var. *procera*.



Fig. 33. Nuristan: Shabul Gul. August 6, 1955.
Alpine zone; *Rheum tibeticum* among stones.



Fig. 34. Nuristan: Shabul Gul. August 6, 1955.
Alpine zone; Association of *Acantholimon nuristanicum*.



Fig. 35. Nuristan: Near the top of the Parun Pass. August 6, 1955.
Alpine zone; *Primula Warshenewskiana* subsp. *rhodantha* in a mixed-herbage meadow.



Fig. 36. Nuristan: Shabul Gul. August 6, 1955.
Alpine zone; Association of *Polygonum affine* with beautiful rosy flowers.



Fig. 37. Nuristan: Near the top of the Parun Pass. August 6, 1955.
Alpine zone; Association of *Cerastium cerastoides* Britt.



Fig. 38. Nuristan: Near the top of the Parun Pass. August 6, 1955.
Alpine zone; Association of *Juniperus seravschanica* growing near a rivulet.



Fig. 39. Nuristan: Near the top of the Parun Pass. August 6, 1955.
Alpine zone; *Cousinia Trolii*, *Polygonum affine* and *Juniperus seravschanica*
were growing among stones.



Fig. 40. Nuristan: The top of the Parun Pass. August 6, 1955.
Alpine zone.

Enumeration of the Flowering Plants

In the following work, the special abbreviations are adopted in the citation of literature and of locality.

Abbreviations of publications.

Boiss., F. O. is the abbreviation of Edmond Boissier, *Flora orientalis sive Enumeratio Plantarum in Oriente a Graecia et Aegypto ad Indiae fines hucusque observatarum*. Vol. I (1867), Vol. II (1872), Vol. III (1875), Vol. IV (1879), Vol. V (1884), Supplementum editore R. Buser (1888).

Hooker f., F. B. I. is the abbreviation of Joseph Dalton Hooker, *Flora of British India*. Vol. I pp. 1–208 (May 1872), pp. 209–464 (Jan. 1874), pp. 465 to end (Feb. 1875). Vol. II pp. 1–240 (May 1876), pp. 241–496 (July 1878), pp. 497 to end (May 1879), Vol. III pp. 1–192 (May 1880), pp. 193–448 (Mar. 1881), pp. 449 to end (1882), Vol. IV pp. 1–256 (June 1883), pp. 257–512 (Jan. 1884), pp. 513 to end (Aug. 1885), Vol. V pp. 1–240 (Aug. 1886), pp. 241–462 (Dec. 1887), pp. 463–686 (Dec. 1888), pp. 687 to end (April 1890), Vol. VI pp. 1–224 (Dec. 1890), pp. 225–448 (July 1892), pp. 449–672 (Sept. 1893), pp. 673 to end (April 1894). Vol. VII (1897).

Aitch., J. L. S. is the abbreviation of J. E. Aitchison in *Journal of the Linnean Society* Vol. XVIII pp. 1–122 (Aug. 3, 1880), Vol. XIX pp. 139–200 (April 13, 1882).

Aitch., T. L. S. n. III is the abbreviation of J. E. Aitchison in *Transactions of the Linnean Society Botany new series* Vol. III pp. 1–139 (1888).

Abbreviations and identifications of geographical names.

Central Asia of this work means Central Asia of U.R.S.S., in other words, Russian Turkestan, and is divided into 10 divisions, namely **Aralo-Kasp.** (abbreviation of Aralo-Kaspiiskii), **Pribalx.** (Pribalxashskii), **Dz.-Tarb.** (Duzngarsko-Tarbataiskii), **Kyz.-Kum.** (Kyzuil-Kumskii), **Kara-Kum.** (Kara-Kumskii), **Gorn.-Turkm.** (Gorno-Turkmenskii), **Amu-Dar.** (Amu-Darinskii podgornuii, Sogdiana in Latin. Amu-Darja is Oxus in Latin), **Syr-Dar.** (Syr-Darinskii podgornuii, Fergana in Latin, Syr-Darja is Jaxartes in Latin), **Pam.-Al.** (Pamiro-Alaiskii, Tadzhikistan, include ancient Hissar), and **Tianshan** (Tianshanskii).

Dz.-Kash. is the abbreviation of Dzungaria-Kashgaria, in other words, Sungaria and East (Chinese) Turkestan.

Arm.-Kurd. is the abbreviation of Armenia and Kurdistan.

Pakistan of this work is Western Pakistan including Baluchistan and Little Tibet, etc.

Kashmir includes Western Tibet of English Botanists.

*Gymnospermae**Taxaceae*

Taxus Wallichiana Zucc. in Abhandl. Bayer. Acad. Classe Math. Phys. III : 805, t. 5 (1843).

Taxus baccata L. subsp. *Wallichiana* (Zucc.) Pilger in Pflanzenreich Heft 18 : 112 (1903).—Haeckel in Fedde, Rep. Beiheft 108 : 30 (1938).

Taxus baccata sensu Aitch., J. L. S. XVIII : 97.

Distr. Afghanistan (E), Pakistan, Himalayas, Burma, China, Indo-China, Sumatra, Celebes, Philippines.

Pinaceae

Abies spectabilis (Don) Spach, Hist. Nat. Végét. Phan. II : 422 (1842).

Pinus spectabilis Don in Lambert, Descr. Pinus II : 3 t. 2 (1824).

Pinus Webbiana Wallich ex Lambert, Descr. Pinus, ed. 8°, II : 77, t. 44 (1832).

Abies Webbiana Lindley in Penny Cycl. I : 30 (1833).—Hooker f., F. B. I. V : 654.—Aitch., J. L. S. XVIII : 98.—Haeckel, 1. c. 30.

Distr. Afghanistan (E), Pakistan, Himalaya : from Kashmir to Bhutan.

Cedrus Deodara (Roxb.) Loudon, Hort. Brit. 388 (1830).—Aitch., J. L. S. XVIII : 98.—Haeckel, 1. c. 31. **Fig. 22.**

Cedrus Libani Barrel var. *Deodara* Hooker f., Himal. Journ. I : 257, F. B. I. V : 653.

Nuristan : Chatrass (Aug. 2, 1955 S. K.).

Distr. Afghanistan (E), Pakistan, Himalaya : from Kashmir to Kumaon.

Cedrus Deodara is very abundant along Pech River, from 1600m up to 2300m, not so hardy as *Pinus Gerardiana* and *P. Griffithii*. The native name of *Cedrus Deodara* is Aizhstup (Pushuki) or Yezho (Voma).

The timber is used for building materials.

Picea Smithiana (Wall.) Boiss., F. O. V : 700 (1884).

Abies Smithiana Wall. ex Aitch., J. L. S. XVIII : 98.

Picea Morinda Link in Linnaea XV : 522 (1841).—Hooker f., F. B. I. V : 653.—Haeckel, 1. c. 30.

Nuristan : Between Pushuki and Kushimaicot circ. 2600m (Aug. 9, 1955 S. K.).

Distr. Afghanistan (E), Pakistan, Himalayas.

This species was growing in the mixed forests, composed of *Pinus Griffithii*, *P. Gerardiana*, *Cedrus Deodara* and deciduous trees.

Pinus Gerardiana Wall. ex Lamb., Pin. ed. II, III : 151 t. 79 (1832).—Royle, Ill. Him. Mount. 353 t. 85 f. 2 (1839).—Aitch., J. L. S. XVIII : 98.—Hooker f., F. B. I. V : 652.

Nuristan : Between Eschtaway and Chatrass (Aug. 8-9, 1955 S. K.).

Distr. Afghanistan (E), Pakistan, Himalaya : from Kashmir to Garwal

The writer interested in the close resemblance between *P. Gerardiana* and *P. Bungeana* of China.

Pinus Griffithii M'Celland in Griffith, Notul. IV : 17 (1854), nom. event., Icones Pl. As. IV : t. 365 (1854) excl. fig. 1-3.—Schwarz in Fedde, Rep. XLIV : 160 (1938).—Kitamura, Fauna and Flora of Nepal Himalaya : 81 (1955). **Fig. 30.**

Pinus excelsa Wall. ex Don in Lambert, Descr. Gen. Pinus II : 5, t. 3 (1824) non Lamarck.—Aitch., J. L. S. XVIII : 97.—Haeckel, l. c. 31. Wall. Pl. As. rar. III t. 201.

Pinus Chylla Loddiges, Cat. 1836 : 50 nom. nud.

Nuristan : Between Pushuki and Kushimaicot, about 2200m (Aug. 9, 1955 S. K.). Distr. Afghanistan (E), Pakistan, Himalaya : from Kashmir to Nepal.

Pinus Griffithii (5-leaved) grows well in Nuristan, from 2000m up to 2650m. There are many tall trees with abundant long cones. The Nuristan name is Webo.

Pinus halepensis Miller, Gard. Dict. ed. 8 no. 8 (1768).

var. ***brutia*** (Ten.) Henry in Elwes & Henry, Trees Gt. Brit. Irel. V : 1100 (1910).

Pinus eldarica Medwedew in Acta Hort. Tiflis. VIII : 21, t. (1902).—Komarov in Fl. URSS I : 172 (1934).

Pinus halepensis sensu Aitch., J. L. S. XIX : 187, T. L. S. n. III : 113.

Native name Naoju.

Kandahar (June 8, 1955 S. K.)—cultivated, Pulikhumri (July 4, 1955 S. K.)—cultivated ; leaves 20cm long, cone 9.3cm long, subsessile.

Distr. A native of South Europe and W. Asia. Cultivated frequently in Afghanistan.

Cupressaceae

Biota orientalis (L.) Endlicher, Syn. Conifer. 47 (1847).—Bornm. in Engler, Bot. Jahrb. XLVI : 246 (1934).

Thuja orientalis L., Sp. Pl. 1002 (1753).

Kandahar (June 8, 1955 S. K.)—cultivated.

Distr. A native of North China and South Manchuria, now widely cultivated.

Cupressus sempervirens L., Sp. Pl. 1002 (1753).—Aitch., J. L. S. XVIII : 97.

Kandahar (June 8, 1955 S. K.)—cultivated.

Distr. A native of the Eastern Mediterranean Region.

Juniperus communis L., Sp. Pl. 1040 (1753).

var. ***saxatilis*** Pallas, Fl. Ross. I, 2 : 12 t. 4, fig. A (1788).—Rehder, Manual 2 ed. 62 (1941).

Juniperus communis γ. *montana* Ait., Hort. Kew. III : 414 (1789).—Haeckel, l. c.

Juniperus sibirica Burgsdorf, Anleit. Sich. Erzieh. Holzart 124 (1887).—Komarov, Fl. URSS I : 181 (1934).

Nuristan : Shabul Gul 3000 m (Aug. 5, 1955 S. K.).

Distr. Circumpolar plant of the northern Hemisphere.

Juniperus polycarpus C. Koch in Linnaea XXII: 303 (1849).—Pilger in Pflanzenfam. 2 ed. 13b: 399 (1926).

Juniperus macropoda Boiss., F. O. V: 709.—Hooker f., F. B. I. V: 647.—Wendelbo in Nytt Mag. Bot. I: 16 (1952).

Juniperus excelsa Wall. (non Bieb.) Aitch., J. L. S. XVIII: 97, T. L. S. n. III: 113.

Distr. Caucasus, Iran, Afghanistan, Pakistan, Himalaya: from Kashmir to Nepal.

Juniperus seravschanica Kom. in Journ. Bot. de l'URSS XVIII: 481 (1932), Fl. URSS I: 187, Tab. VIII-7 (1934). **Fig. 38**

Juniperus polycarpus Haeckel (non Koch), 1. c. 31.

Nuristan: Shabul Gul 3800 m (Aug. 6, 1955 S. K.).

Distr. Central Asia, Afghanistan, Pakistan.

The Afghan specimens have fruits with 2 seeds. The plants were dwarf shrubs with the branches adpressed to the gravelly ground.

The writer has not adequate materials for the discussion about *J. polycarpus* and *J. seravschanica*. Some specimens reported as *J. excelsa* sensu Aitch. and *J. macropoda* Boiss. by Boiss., Hooker f. and Wendelbo, may belong to *J. seravschanica*. *J. seravschanica* may be a variety of *J. polycarpus*.

Aitchison reported from Kuram *J. sp.* near *Juniperus recurva* (J. L. S. XVIII: 97).

Ephedraceae

Ephedra foliata Boiss. & Kotschy, Diag. Pl. Or. Ser. I, VII: 101 (1846), F. O. V: 716.—C. A. Mey. in Mém. Sci. Nat. Acad. Pétersb. sér. 6, V: 297 (1846).—Aitch., T. L. S. n. III: 112.

Ephedra ciliata Fischer ex C. A. Mey., 1. c. (1846).—Aitch., J. L. S. XIX: 187.—Bobrov in Fl. URSS I: 198, Tab. IX-3 (1934).

Ephedra foliata var. *ciliata* Stapf. in Denkschr. Ak. Wien. Math. Naturw. Bd. LVI: 49 (1889).—Haeckel, 1. c. 32.

Between Bulola and Doab (June 25, 1955 S. K.), between Pulikhumri and Haibak (June 27, 1955. S. K.).

Distr. Central Asia, Iran, Afghanistan, Pakistan.

The native name: Hum-i-banak (Aitch.).

Ephedra intermedia Schr. ex C. A. Meyer, 1. c. 88 (1846).—Bobrov in Fl. URSS I: 198 (1934).—Bornm. in Engler, Bot. Jahrb. LXVI: 246 (δ persica Stapf).—Haeckel, 1. c. 32. (var. *tibetica* Stapf, 1. c. 63).

Eastern Prov. between Kandai and Seprigal (July 28, 1955 S. K.)—sterile.

Distr. Central Asia, W.-Siberia, Afghanistan, Pakistan, Tibet.

Branches 2–3 mm broad, internodes 4.5–7 cm long.

Ephedra major Host, Fl. Austr. II: 671 (1827).—Rehder, Manual 2 ed. 70 (1941). var. **procera** (Fischer et Meyer) Fitschen in Beissner, Nadelh. ed. 3, 634, fig. 172

(1930).—Haeckel, 1. c. 32. **Fig. 32.**

Ephedra procera Fischer et Mey., Ind. Sem. Hort. Petrop. [X: 45 (1845).
—Bobrov, 1. c. 203 (1934).

Ephedra nebrodensis sensu Boiss., F. O. V: 713 p. p.

Nuristan: Eschtaway circ. 3500 m. (Aug. 5, 1955 S. K.)—♂ fl.

Distr. Greece, Asia Minor, Caucasus, Arm.-Kurd., Iran, Afghanistan, Pakistan, Himalayas.

The inner bracts connate below the middle. In Nuristan, var *procera* grows well. The formation looks like that of *Pinus pumila* in Japanese alps.

Aitchison reported *E. distachya* from Kuram (J. L. S. XIX: 186) and Hari-rud valley (T. L. S. n. III: 112).

Ephedra pachyclada Boiss., F. O. V: 713 (1884).—Aitch., T. L. S. n. III: 111, Pl. 47, 1–10.—Hooker f., F. B. I. V: 641.—Haeckel, 1. c. 32.

Distr. Iran, Afghanistan, Pakistan, Himalaya: from Kashmir to Garwal.

Ephedra sarcocarpa Aitch. et Hemel., T. L. S. n. III: 112, Pl. 47, 11–15 (1888).—Haeckel, 1. c. (1938).

Distr. Afghanistan.

Angiospermae

Monocotyledoneae

Typhaceae

Typha angustata Bory et Chaubard, Exp. sc. Morée II, 1: 338 (1832).—Boiss., F. O. V: 50.—Graebner in Pflanzenreich Heft II: 14, Fig. 4-F (1900).—Fedch. in Fl. URSS I: 215, Tab. X-3 (1934).

Jalalabad (June 17, 1955 S. K.), Kunduz (July 7, 1955 S. K.), 15 km east from Kandahar (June 6, 1955 S. K.).

Distr. Southern Europe, North Africa, Central Asia, Asia Minor, Iran, Afghanistan, Dz.-Kashg., Mongolia, China, Japan.

In Afghanistan *T. angustata* grows well, forming large associations in swamps.

Typha angustifolia L., Sp. Pl. 971 (1753).—Aitch., J. L. S. XIX: 188.—Graebner, 1. c. 11, Fig. 4-B (1900).—Fedch., 1. c. 215, Tab. X-1 (1934). **Fig. 2.**

Distr. Eurasia, North America.

Typha latifolia L., Sp. Pl. 971 (1753).—Aitch., J. L. S. XIX: 188 (?).—Graebner, 1. c. 8, Fig. 3-A (1900).—Fedch., 1. c. 210, Fig. 2 (1934).

Distr. Cosmopolitan.

Typha Laxmanni Lepechin in Nova Acta Acad. Petrop. XII: 84, 335 t. 4 (1801).—Boiss., F. O. V: 50.—Graebner, 1. c. 10 (1900).—Fedch., 1. c. 212 (1934).

Typha Martini Thoms. ex Aitch., J. L. S. XIX: 188.

Kandahar, Arghandab (June 7, 1955 S. K.).

Distr. South-east Europe, Caucasus, Asia Minor, Central Asia, Siberia, Ussuri, Mongolia, China.

Sparganiaceae

Sparganium erectum L., Sp. Pl. 971 (1953).

Sparganium ramosum Huds., Fl. Ang. 2 ed. 401 (1778).—Graebner in Pflanzenreich Heft II: 13, fig. 3-B (1900).

Sparganium ramosum subsp. *polyedrum* Asch. et Graeb., Syn. Mittel-Europ. Fl. I: 284 (1897).—Graebner, l. c. 13.

Sparganium polyedrum Asch. et Gr. ex Juzep. in Fl. URSS I: 219, Tab. XI, f. 1. Kunduz (July 11, 1955 S. K.).

Distr. Europe, Caucasus, Siberia, Afghanistan.

The specimens from Kunduz have branches with 2-3 female heads and numerous male heads. The fruits are 6 mm long 5-6 mm broad. Thus the specimens belong to subsp. *ramosum*.

Sparganium stoloniferum Buch.-Ham. ex Juzepchuk in Fl. URSS I: 219, Tab. XI, f. 2 (1934).

Sparganium ramosum subsp. *stoloniferum* Graebner in Pflanzenreich Heft II: 14. Distr. Siberia, Central Asia, Afghanistan, China, Japan.

Potamogetonaceae

Potamogeton alpinus Balbis, Misell. Bot. in Mém. Ac. Sc. Turin: 327 (1804).—Asch. et Graeb. in Pflanzenreich Heft XXXI: 70, Fig. 18 (1907).—Juzep. in Fl. URSS I: 252, Tab. XII-8 (1934).

Potamogeton rufescens Schrad in Kunth, Fl. Berol. 5 (1815).—Boiss., F. O. V: 16. Reich., Ic. VIII t. 32.

Potamogeton amblyophyllus C. A. Mey. in Beitr. Pflanzenkunde russ. Reiches 10 (1849).—Baagoe in Paulsen, Pl. Olufsen's Pamir Exped. 181 (1903).—Jugep., l. c. 237.

Distr. Caucasus, Central Asia, Altai, Afghanistan (Wakhan).

Potamogeton filiformis Pers., Syn. I: 152 (1805).—Baagoe, l. c. 181.

Distr. Cosmopolitan.

Distr. Europe, Caucasus, Siberia, Central Asia, Afghanistan, Tibet.

Potamogeton lucens L., Sp. Pl. 126 (1753).—Boiss., F. O. V: 16.—Asch. et Graeb. in Pflanzenreich Heft XXXI: 76, Fig. 18 A-D (1907).

Distr. Cosmopolitan.

Potamogeton natans L., Sp. Pl. 126 (1753).—Boiss., F. O. V: 15.—Asch. et Graeb., l. c. p. 42, Fig. 13 (1907). Reich., Ic. VII t. 50.

Distr. Cosmopolitan.

Potamogeton pectinatus L., Sp. Pl. 127 (1753).—Boiss., F. O. V : 19.—Asch. et Graeb., l. c. 121, Fig. 28 A–B (1907). Reich., Ic. VII t. 19.

Distr. Cosmopolitan.

Potamogeton perfoliatus L., Sp. Pl. 126 (1753).—Boiss., F. O. V : 17.—Asch. et Graeb., l. c. 92, Fig. 21 (1907).—Baagoe in Paulsen, Pl. Olufsen's Pamir Exped. 180 (1903).—Juzep. in Fl. URSS I : 260, Tab. XII–26 (1934). Reich., Ic. VII t. 39.

Kabul (July 16, 1955 S. K.).

Distr. Cosmopolitan.

subsp. **Muelleri** A. Bennett in Journ. of Bot. XV : 277.—Baagoe, l. c. 177 (pro var.).—Asch. et Graev., l. c. 95.

Distr. Afghanistan (Wakhan), Australia.

Potamogeton polygonifolius Pourr. in Mém. Acad. Toulouse III : 325 (1788).—Ascher. et Graeb., l. c. 65, Fig. 16 A–D (1907). Reich., Ic. VII t. 44.

Potamogeton oblongum Viv. in Ann. Bot. I, 2 : 102 (1802).—Aitch., J. L. S. XVIII : 99.

Distr. Cosmopolitan.

Zannichellia palustris L., Sp. Pl. 969 (1753).—Boiss., F. O. V : 14.—Asch. et Graeb., l. c. 153, Fig. 34. (1907). Reich., Ic. VII t. 16.

Distr. Cosmopolitan.

Najadaceae

Najas major All., Fl. Ped. II : 221 (1785).—Boiss., F. O. V : 27.

Distr. Cosmopolitan.

Scheuchzeriaceae

Triglochin palustris L., Sp. Pl. 338 (1753).—Aitch., J. L. S. XVIII : 99.—Boiss., F. O. V : 13.—Fedsch. in Fl. URSS I : 277, Tab. X–6 (1934). Reich., Ic. VII t. 51.

Bulola (June 25, 1955 S. K.), Nuristan : Eschtaway (Aug. 7, 1955 S. K.).

Distr. Eurasia, America.

Alismataceae

Alisma Plantago-aquatica L., Sp. Pl. 342 (1753).—Aitch., J. L. S. XVIII : 99.—Boiss., F. O. V : 9.—Juzep. in Fl. URSS IV : 280, Tab. XIV–1.

Distr. Eurasia, North America, Australia.

Sagittaria trifolia L., Sp. Pl. 993.—Juzepchuk in Fl. URSS I : 288, Tab. XIV–8 (1934).

Sagittaria sagittifolia Aitch. (non. L.), J. L. S. XVIII : 99.—Boiss., F. O. V : 11 pro parte.

Jalalabad (June 17, 1955 S. K.).

Distr. Caucasus, Iran, Afghanistan, Central Asia, Siberia, Ussuri, Japan, China, India.

Butomaceae

Butomus umbellatus L., Sp. Pl. 372 (1753).—Boiss., F. O. V : 12.—Hooker f., F. B. I. VI : 562. Reich., Ic. VII t. 58;

Distr. Europe, Caucasus, Asia Minor, Central Asia, Iran, Afghanistan, Pakistan, Kashmir, Siberia, Ussuri, Mongolia, Manchuria, North China.

Gramineae by Jisaburo Ohwi

Aegilops crassa Boiss., Diagn. Ser. I, VII : 129 (1846), F. O. V : 677.—Nevski in Fl. URSS II : 671, Tab. XLVIII-3 (1934).

Triticum crassum Aitch. et Hemsl., T. L. S. n. III : 127.

Between Pulikhumri and Hibak (June 27, 1955 K. Yamashita).

Distr. Iran, Eastern Mediterranean Region, Afghanistan, Central Asia : Syr-Dar., Pam.-Al., Gorn.-Turkm.

Aegilops cylindrica Host., Gram. Austr. II : 6 (1802).—Roshev., 1. c. 129.

Distr. Europe to Central Asia.

Aegilops persica Boiss., Diag. 1. c. (1846), F. O. V : 675.

Triticum persicum Aitch. et Hemsl., T. L. S. n. III : 127.

Distr. Iran, Afghanistan (W).

Aegilops squarrosa L., Sp. Pl. 1051 (1753).—Boiss., F. O. V : 676. **Fig. 9, 10.**

Triticum squarrosum Roth, Neue Beytr. I : 128 (1802).—Aitch., T. L. S. n. III : 127.

Triticum Aegilops Beauv., Agrost. 180 nomen (1812).—Hooker f., F. B. I. VII : 367.

Shishigar (June 11, 1955 S. K.), between Ghazni and Kabul (June 7, 1955 H. Kihara), between Pulikhumri and Haibak (June 27, 1955 H. Kihara), between Pulkhumri and Haibak (June 27, 1955 K. Yamashita).

Distr. Caucasus, Central Asia, Arm.-Kurd., Afghanistan, Pakistan.

Boissier reported this species from Pakistan on the specimen collected by Stocks and Hooker also reported from Wazuristan on the specimen collected by Stewart.

We found large formations of *Aegilops squarrosa* between Pulikhumri and Haibak, where we also found *A. triuncialis* and *A. crassa*.

Aegilops triuncialis L., Sp. Pl. 1051 (1753).—Nevski in Fl. URSS II : 672, Tab. XLVIII-4 (1934).

Triticum triunciale Raspail in Ann. Sc. Nat. sér. I, V : 435 (1825).—Aitch. et Hemsl., T. L. S. n. III : 127.

Between Pulkhumri and Haibak (June 27, 1955 S. K.).

Distr. Mediterranean Region, Arm.-Kurd., Iran, Caucasus, Central Asia, Afghanistan.

Aeluropus litoralis (Gouan) Parl., Fl. Ital. I : 461 (1848).—Boiss., F. O. V : 594.—Aitch., T. L. S. n. III : 125.—Rosh. in Fl. URSS II : 357, Tab. XXVII-13 (1934).

Between Pulikhumri and Haibak (July 10, 1955 S. K.), Kabul west, in Rwamp (July 22, 1955 S. K.), 15km east from Kandahar (June 6, 1954 S. K.).

Distr. Mediterranean Region, Caucasus, W. Siberia, Central Asia, Arm.-Kurd., Iran, Afghanistan, Pakistan, Dzung.-Kashg., India.

β. **repens** Cosson, Exp. 155 (1855-67).—Boiss., F. O. V: 594.—Aitch., T. L. S. n. III: 125.

Distr. Egypt, Arabia, Mesopotamia, Caucasus, Iran, Afghanistan, Pakistan.

Agropyron cristatum (L.) Gaertn., Nov. comm. Petrop. XIV: 540 (1770).—Boiss., F. O. V: 677.—Aitch., T. L. S. n. III: 126.—Nevski in Fl. URSS II: 661, Tab. XLVIIa-5 (1934).

Distr. Siberia, Mongolia, Tibet, Dz.-Kashg., Central Asia, Afghanistan.

Agropyron repens (L.) P. Beauv. Agrost. 102 (1872).—Boiss., F. O. V: 633. Nevski in Fl. URSS II: 652, Tab. XLVII-6 (1934).

Distr. Europe, North Africa, and W. Asia, now widely distributed in the Northern Hemisphere.

var. **glaucum** Boiss., F. O. V: 664.

Distr. W. Asia.

Agropyron trichophorum (Link) Richter, Pl. Europ. I: 124 (1890).

Elytrigia trichophora (Link) Nevski in Act. Univ. As. Med. ser. VIII b, Bot. Fasc. 17: 61 (1934).

Agropyron Aucheri Boiss., Diagn. Sér. I, V: 75 (1844), F. O. V: 664.—Aitch., T. L. S. n. III: 126.

Distr. E. Europe, Caucasus, Central Asia, Balk., Asia Minor, Arm.-Kurd., Iran, Afghanistan.

Agrostis palustris Huds., Fl. Angl. 27 (1762).

Agrostis maritima Lam., Encycl. I: 61 (1783).—Schischkin, in Fl. URSS II: 185.

Agrostis alba L., Sp. Pl. 63 (1753).—O. Paulsen, Pl. Olufsen's Pamir Exped. 165. (1934).

Taiwara (Sept. 8, 1955 T. Umesao), Kabul, Dal-ul-Aman (July 18, 1955 S. K.), Nuristan: Chatrass (Aug. 2, 1955 S. K.), Voma (July 30, 1955 S. K.).

Distr. Europe, Afghanistan, Pakistan.

Agrostis semiverticillata (Forsk.) C. Christ. Dansk Bot. Ark. XLIII: 12 (1922).

Phalaris semiverticillata Forsk., Fl. Aegypt.-Arab. 17 (1775).

Agrostis verticillata Vill., Prosp. Fl. Dauph. 16 (1776).—Schischkin in Fl. URSS II: 188, Tab. XIII-15 (1934).

Shibar Pass (June 24, 1955 S. K.).

Distr. Europe, Caucasus, Central Asia, Asia Minor, Iran, Afghanistan, Pakistan.

Agrostis subaristata Aitch. et Hemsl., J. L. S. XIX: 192, pl. 29 (1882).

Distr. Afghanistan (Kuram).

Alopecurus geniculatus L., Sp. Pl. 60 (1752).—Boiss., F. O. V: 486.—Ovczin-

nikov, 1. c. 157, Tab. X-2 (1934).

Distr. Europe, Siberia, Caucasus, Iran, Afghanistan, North America.

Alopecurus glacialis C. Koch in Linnaea XXI: 382 (1848).—Boiss., F. O. V: 489.—Ovczinnikov in Fl. URSS II: 145, Tab. XI-10 (1934).

Nuristan: Shabul Gul (Aug. 6, 1955 S. K.).

Distr. Caucasus, Afghanistan.

Alopecurus glaucus Less. in Linnaea IX: 206.—Ovczinnikov, 1. c. 153, Tab. X-6 (1934).

Nuristan: Between Pronz and Eschtaway (Aug. 5, 1955 S. K.).

Distr. Afghanistan, Caucasus, Ural, Altai, Tarbagatai, Eastern Siberia.

Alopecurus myosuroides Huds., Fl. Angl. 1 ed. 23 (1762).—Ovczinnikov, 1. c. 156, Tab. X-5 (1934).

Alopecurus agrestis L., Sp. Pl. 2 ed. 89 (1762).—Boiss., F. O. V: 485.

Distr. Europe, Caucasus, Central Asia, Asia Minor, Iran, Afghanistan.

Alopecurus pratensis L., Sp. Pl. 60 (1753).—Aitch., T. L. S. n. III: 123.—Ovczinnikov, 1. c. 150, Tab. XI-2,3 (1934).

Alopecurus arundinacea Poir.—Boiss., F. O. V: 488.

Kabul, West (July 22, 1955 S. K.), Shibar (July 11, 1955 S. K.).

Distr. Europe, Caucasus, Siberia, Central Asia, North Africa, Iran, Afghanistan, Pakistan.

Andropogon pertusus Willd., Sp. Pl. IV: 922 (1806).—Boiss., F. O. V: 464.—Hooker f., F. B. I. VII: 173.

Distr. Afghanistan (Kuram), Pakistan, India, Burma, Sicily, Tropical Asia, Africa, Australia.

Aneurolepidium dasystachys (Trin.) Nevski in Komar. Fl. U R S S II: 706 (1934).

Elymus dasystachys Trin. in Ledeb., Fl. Alt. I: 120 (1829).—Roshev. in Bull. Appl. Bot. Gen. Pl. Breed. XIX: 126 (1928).

Distr. Altai and Central Asia to Mongolia.

Anthosachne Jacquemontii (Hooker f.) Nevski, 1. c. 598, Tab. XLIV-20 (1934).

Brachypodium tataricum Munro ex Aitch., J. L. S. XVIII: 109, nomen.

Agropyrum longiaristatum f. *Aitchisoni* Boiss., F. O. V: 660.

Agropyron Jacquemontii Hooker f., F. B. I. VII: 369.

Distr. Pam.-Al., Afghanistan (Kuram), W. Tibet, W. Himalaya.

Anthosachne longiaristata (Boiss.) Nevski in Fl. URSS II: 598, Tab. XLV-19 (1934).

Agropyrum longiaristatum (Boiss.) Boiss., F. O. V: 660.

Distr. Iran, Gorn.-Turkm. Afghanistan.

Apluda mutica L., Sp. Pl. 82 (1753).

var. **aristata** (L.) Pilger in Pflanzenfam. 2 ed. 14b, e: 130 (1940).

Apluda aristata L., Cent. II: 7 (1756).

Apluda varia subsp. *aristata* Hack. ex Hooker f., F. B. I. VII : 150.

Nuristan : Between Voma and Trokikorl (July 31, 1955 S. K.).

Distr. sp. Afghanistan (E), Mauritius, Sokotra, India, South E. Asia, New Caledonia.

Aristida adscensionis L., Sp. Pl. 82 (1753).—Roshev. in Fl. URSS II : 66, Tab. V-1 (1934).

Aristida caerulea Desf., Fl. Alt. I : 109, Tab. 21-2 (1798).—Boiss., F. O. V : 491.

Doab (July 10, 1955 S. K.).

Distr. Widely distributed in warm regions.

Aristida caloptila (Jaub. et Spach) Boiss., F. O. V : 497.

Arthratherum caloptilum Jaub. et Spach, Ill. Or. t. 336.

Distr. Egypt, Arabia, Iran, Afghanistan.

Aristida cyanantha Steud., Syn. Pl. Glum. 141 (1855).—Boiss., F. O. V : 492.—Hooker f., F. B. I. VII : 225.

Distr. Pakistan (Kuram), Karakoram : Between Chart and Normal (Aug. 23, 1955 S. Nakao), Himalaya : from Kashmir to Kumaon.

Aristida plumosa L., Sp. Pl. 2 ed. 1666 (1763).—Aitch., T. L. S. n. III : 123.—Roshev., 1. c. 67, Tab. V-2-4 (1934).

Distr. Eastern Mediterranean Region, Caucasus, Iran, Central Asia, Afghanistan, Pakistan.

Aitchison reported (in T. L. S. n. III : 123) *Aristida pungens* Desf. from W. Afghanistan.

Arundo Donax L., Sp. Pl. 81 (1753).—Aitch., T. L. S. n. III : 124.

Sarobi (June 16, 1955 S. K.).

Distr. Mediterranean Region, Caucasus, Central Asia, Iran, India, China, Japan.

Avena fatua L., Sp. Pl. 800 (1753).—Aitch., T. L. S. n. III : 124.

Distr. Northern Hemisphere.

Avena sterilis L., Sp. Pl. 2 ed. 118 (1762).—Boiss., F. O. V : 542.

Distr. Mediterranean Region, Caucasus, Iran, Afghanistan.

Boissiera squarrosa (Banks et Soland) Nevski in Fl. et Syst. IV : 341 (1937).

Boissiera bromoides Hochst. in Steud., Nomencl. 2 ed. 213 (1841).—Boiss., F. O. V : 560.—Aitch., T. L. S. n. III : 124.—Jaub. et Spach, Ill. Or. t. 197.

Distr. Caucasus, Central Asia, Eastern Mediterranean Region, Arm.-Kurd., Iran, Afghanistan.

Bothriochloa Ischaemum (L.) Keng in Contr. Biol. Lab. Sc. Soc. China, Bot. ser. X : 201 (1936).

Andropogon Ischaemum L., Sp. Pl. 1047 (1753).—Boiss., F. O. V : 463.

Kabul, Dal-ul-Aman (July 18, 1955 S. K.), Sarobi (June 16, 1955 S. K.), Nuristan : Chatrass (Aug. 2, 1955 S. K.).

Distr. Eurasia.

Brachiaria eruciformis (Sibth.) Griseb. in Ledeb., Fl. Ross. IV : 469 (1853).

Panicum eruciforme Sibth. et Smith, Prodr. Fl. Graec. I : 40 (1806).

Kunduz (July 7, 1955 S. K.).

Distr. Eastern Mediterranean Region, Iran, Caucasus, Central Asia, Afghanistan, Pakistan, Himalaya, India.

Brachiaria ramosa (L.) Stapf in Prain, Fl. Trop. Afr. IX : 542 (1919).

Panicum ramosum Linn., Mant. I : 29. (1767).—Hooker f., F. B. I. VII : 36.

Panicum Petiverii Boiss., F. O. I. : 439.

Distr. India, Pakistan, Afghanistan to tropical Africa.

Brachiaria reptans (L.) C. A. Gardn. et C. E. Hubbard in Hooker, Icon. Pl. 34, sub tab. 3363 (1938).

Panicum reptans L., Syst. Nat. ed. 10. II : 870 (1759).

Panicum prostratum Lam., Encycl. I : 171 (1791).—Boiss., F. O. V : 438.

Distr. Pantropic.

Bromus anatolicus Boiss. et Heldr., Diag. Ser. I, XIII : 63 (1853).—Roshev., l. c. 578.

Nuristan : Between Chatrass and Kushimaicot (Aug. 2, 1955 S. K.).

Distr. Krim., Caucasus, Asia Minor, Afghanistan.

Bromus Benekeni (Lge.) Trimen in Journ. of Bot. 333 (1872).—Roshev., l. c. 558.

Nuristan : Chatrass (Aug. 2, 1955 S. K.).

Distr. Europe, North Africa, Caucasus, Alt., Central Asia, Asia Minor, Afghanistan.

Bromus commutatus Schrad., Fl. Germ. I : 353 (1806).—Aitch., T. L. S. n. III : 126.

Between Bulola and Doab (June 25, 1955 S. K.).

Distr. Europe, North Africa, Caucasus, Afghanistan, Pakistan : Karakoram, Gilgit 500 m. (May 31, 1955 S. Nakao), Askole 3200 m (July 24, 1955 S. Nakao).

Bromus Danthoniae Trin. in C. A. Mey., Ind. 24 (1831).—Aitch., T. L. S. n. III : 125.—Roshev. in Fl. URSS II : 582, Tab. XLII-5 (1934).

Distr. Balk., Asia Minor, Iran, Caucasus, Central Asia, Afghanistan, Pakistan : Chaman (June 2, 1955 S. K.).

Bromus gracillimus Bunge in Mém. Ac. Pétersb. Sav. Etrang. VII : 527 (1851).—Roshev., l. c. 574, Tab. XLII-6 (1934).

Bromus crinitus Boiss. et Hoh., Diag. Ser. I, XIII : 64 (1853), F. O. V : 647.—Aitch., T. L. S. n. III : 125.

Distr. Iran, Central Asia, Afghanistan.

Bromus japonicus Thunb., Fl. Jap. 52, t. 11 (1784).—Roshev., l. c. 578, Tab. XLII-10 (1934).

Bromus patulus Mert. et Koch, Deutschl. Fl. I : 685 (1823).—Boiss., F. O. V : 655.

Distr. Northern Hemisphere.

var. **umbrosa** O. Paulsen, l. c. 176.

Distr. Afghanistan (Wakhan).

Bromus macrostachys Desf., Fl. Alt. I: 96 Tab. 19, fig. 2 (1798).—Boiss., F. O. V: 652 (*γ triaristatus*).—Roshev., l. c. 582.

Distr. Afghanistan, Central Asia, Western Asia, Mediterranean Reg.

Bromus Munroi Boiss., F. O. V: 643 (1884).

Bromus inermis Leyss. var. *confinis* Stapf ex Hooker f., F. B. I. VII: 358.

Distr. Pakistan (Kuram etc.), Himalaya: Kunawar.

Bromus stenostachys Boiss., F. O. V: 643 (1884).

Distr. Afghanistan (Kuram), Pakistan: Karakoram, Baltro Glacier 3500 m. (Aug. 19, 1955 S. Nakao).

Bromus tectorum L., Sp. Pl. 77 (1853).—Boiss., F. O. V: 647.—Aitch., T. L. S. n. III: 125.

Between Bulola and Doab (June 25, 1955 S. K.), between Sarobi and Kabul (June 18, 1955 S. K.), Nuristan: Between Chatrass and Kushimaicot (Aug. 2, 1955 S. K.).

Distr. Northern Hemisphere.

Calamagrostis emodensis Griseb. in Goett. Nachr. III: 80 (1868).

var. **brevisetia** Hack. in O. Paulsen, l. c. 167 (1903).

Distr. Himalayas.

Calamagrostis Epigeios (L.) Roth, Tent. Fl. Germ. I: 34 (1788).—Boiss., F. O. V: 522.—Roshev. in Fl. URSS II: 194, Tab. XIV-1.—Paulsen, l. c. 167.

Distr. Eurasia, North America.

Calamagrostis Munroana Boiss., F. O. V: 528 (1884).—Hooker, f., F. B. I. VII: 263.

Agrostis Munroana Aitch. et Hemsl., J. L. S. XIX: 192.

Distr. Pakistan (Kuram), Himalaya: from Kashmir to Kumaon.

Calamagrostis Pseudophragmites (Hall. f.) Koeler, Descr. Gram. 106 (1802).—Roshev., l. c. 196, Tab. XIV-5.

Calamagrostis littorea DC., Fl. Fr. V: 255 (1815).—Boiss., F. O. V: 524.

Calamagrostis nepalensis Nees ex Steud., Syn. Glum. 193 (1855).—Aitch., T. L. S. n. III: 125.

Nuristan: Eschtaway (Aug. 5, 1955 S. K.), between Pronz and Eschtaway (Aug. 5, 1955 S. K.), between Pronz and Eschtaway (Aug. 5, 1955 S. K.), Voma (July 30, 1955 S. K.), Doab (July 10, 1955 S. K.), Pagman (July 15, 1955 S. K.).

Distr. Eurasia.

Catapodium marinum (L.) C. E. Hubb. in Kew Bull. 1954: 375.

Festuca marina Linn., Amoen. Acad. IV: 96 (1759)—Roshev., l. c. 126.

Distr. Mediterranean Region.

Catapodium pungens Boiss., F. O. V : 635 (1884).

Distr. Afghanistan (Reg. Kandahar).

Chloris villosa (Desf.) Pers., Syn. I : 87 (1805).—Roshev., l. c. 286, Tab. XXII-a.

Tetrapogon villosus Desf., Fl. Atl. II : 87 (1800).—Boiss., F. O. V : 555.

Distr. Mediterranean Region, Iran, Gorn.-Turkm., Afghanistan, Pakistan.

Chrysopogon Aucheri Boiss., Diag. Ser. I, V : 7 (1844).

Chrysopogon ciliolatus var. *Aucheri* Boiss., F. O. V. 458.

Between Sarobi and Kabul (June 18, 1955 S. K.).

Distr. Iran, Afghanistan, Pakistan.

Chrysopogon Gryllus (L.) Trin., Fund. Agrost. 188 (1820).—Boiss., F. O. V : 458.—Roshev. in Fl. URSS II : 15, Tab. 1-11.

Nuristan : Between Trokikori and Chatrass (Aug. 1, 1955 S. K.).

Distr. Europe, North Africa, Caucasus, Iran, Afghanistan, Himalaya : from Kashmir to Sikkim, Khasia Hills.

Chrysopogon serrulatus Trin. in Mém. Acad. Pétersb. sér. VI, II : 318 (1833).—Parsa, Fl. Iran V : 538.

Chrysopogon ciliolatus Boiss., F. O. V : 458.

Andropogon ciliolatus Nees ex Steud., Syn. Pl. Glum. 396 (1855).

Distr. Afghanistan (Kuram), Pakistan.

Crypsis schoenoides (L.) Lam., Ill. I : 166 (1791).—Roshev. in Fl. URSS II : 125, Tab. VIII-3.

Heleochloa schoenoides (L.) Host, Gram. Austr. I : 23 (1801).—Boiss., F. O. V : 476.

Distr. Europe, North Africa, Caucasus, W. Siberia, Central Asia, Asia Minor, Iran, Afghanistan Dzung.-Kashg.

Cymbopogon distans (Nees) Wats. in Atkins. Gaz. N. W. Prov. Ind. 392 (1882).—Bor in J. Bomb. N. H. S. LII : 169 (1954).

Andropogon distans Nees ex Steud., Syn. Glum. 387 (1855).—Hooker f., F. B. I. VII : 207.

Ghunoy near Sarobi (June 15, 1955 S. K.), between Sarobi and Kabul (June 18, 1955 S. K.).

Distr. Afghanistan, Himalaya : from Kashmir to Kumaon.

Cymbopogon Iwarancusa Schult., Mant. II : 558 (1771).

Andropogon Iwarancusa Roxb. in Phil. Trans LXXX : 284, t. 16 (1790).—Jones in Asiat. Research. IV : 109 (1795).—Boiss., F. O. V : 466.—Hooker f., F. B. I. VII : 203.

Distr. India, Pakistan (Kuram).

Cymbopogon Schoenanthus (L.) Spreng., Pugill. II : 15 (1815).—Parsa, Fl. Iran V : 547 (1950).

Andropogon Schoenanthus L., Sp. Pl. 1046 (1753).

Andropogon laniger Desf., Atl. II : 379 (1800).—Boiss., F. O. V : 465.—Aitch., T. L. S. n. III : 123.

Distr. North Africa, Mesopotamia, Iran, Afghanistan, India, Pakistan.

Cynodon dactylon (L.) Pers., Syn. I : 85 (1805).—Boiss., F. O. V : 553.

Kandahar (June 6, 1955 S. K.), between Pulikhumri and Haibak (June 27, 1955 S. K.).

Distr. Pantropic.

Dactylis glomerata L., Sp. Pl. 71 (1753).—Roshev., l. c. 126 (var. *clata* Peterm.).

Distr. Eurasia, N. America.

Dichanthium annulatum Stapf in Prain, Fl. Trop. Afr. IX : 178 (1917).—Parsa, Fl. Iran V : 544 (1950).

Andropogon Bladhii Retz., Obs. II : 27 (1781).—Boiss., F. O. V : 464.

Andropogon annulatus Forsk., Descrip. 173 (1775).

Distr. Tropical Africa, Asia, Australia, Pacific Islands.

Digitaria sanguinalis (L.) Scop. was reported from Afghanistan by Boissier (F. O. V : 433 sub *Panico*). Recently, the distribution of *D. sanguinalis* is restricted to Europe. The Afghan plant may belong to another species.

Digitaria nodosa Parl., Plant. Nov. 39 (1842).—Bor in Webbia II : 338 (1955).

Panicum pabulare Aitch. in J. L. S. XIX : 190 (1882).

Paspalum sanguinale var. *pabulare* (Aitch.) Hook. f., F. B. I. VII : 15.

Distr. India : Panjab, Sind, and Pakistan.

Dinebra retroflexa (Vahl) Panzer in Denksch. Acad. Muench. IV : 270, t. 12 (1814).—Boiss., F. O. V : 557.—Pilger in Pflanzenfam. 2 ed. 14b, d : 21 (1956).

Distr. From Africa to India.

Diplachne fusca (L.) Beauv., Ess. Agrost. 163 (1812).—Roshev., l. c. 126.

Festuca fusca L., Sp. Pl. 2 ed. 109 (1761).

Festuca spadicea L., Syst. 12 ed. 732 (1767).—Roshev., l. c. 126.

Distr. S. Europe to India, S. China and Japan.

Duthiaea oligostachya Stapf ex Hooker f., F. B. I. VII : 283 (1897).

Avena oligostachya Munro ex Aitch., J. L. S. XIX : 193 pl. 30 (1882).—Boiss., F. O. V : 548.

Distr. Afghanistan (Kuram).

Echinochloa Crus-galli (L.) P. Beauv., Ess. Agrost. 53, 161 (1812).

Panicum Crus-galli L., Sp. Pl. 56 (1753).—Boiss., F. O. V : 435.

Kandahar (June 8, 1955 S. K.), Mazarisharif (June 30, 1955 S. K.), between Doab and Pulikhumri (June 26, 1955 S. K.).

Distr. sp. Cosmopolitan.

Eleusine flagellifera Nees in Linnaea XVI : 220 (1942).—Boiss., F. O. V : 555.

—Pilger in Pflanzenfam. 2 ed. 14b. d: 25 (1956).

Distr. North Africa, Arabia, Iran, Afghanistan, Pakistan.

Elionurus hirsutus Munro ex Benth. in Journ. Linn. Soc. XIX: 68 (1881).—Boiss., F. O. V: 466.

Distr. North Africa to Pakistan.

Elymus caducus (Munro) Boiss., F. O. V: 691.

Hordeum caducum Munro ex Aitch., J. L. S. XVIII: 110.

Distr. Afghanistan (Kuram).

Elymus dahuricus Turcz. in Bull. Soc. Nat. Mosc. XXIX, I: 61 (1956).

Elymus excelsus Turcz. in Bull. Soc. Nat. Mosc. XXIX, I: 62 (1856).—Boiss., F. O. V: 690.

Nuristan: Between Kushimaicot and Pushuki (Aug. 3, 1955 S. K.).

Distr. Iran, Pam.-Al., Afghanistan, Tianshan, Pakistan, Dz.-Tarb., Alt., E. Siberia, Mongolia, North China to Japan.

Elymus sibiricus L., Sp. Pl. 83 (1753).—Paulsen, l. c. 178.—Roshev., l. c. 126.

Distr. E. Europe through Siberia to N. Korea and Japan.

Enneapogon persicus Boiss., Diagn. Ser. I, V: (1844).

Pappophorum persicum (Boiss.) Steud., Syn. Pl. Gram. 200 (1855).—Boiss., F. O. V: 558.—Roshev. in Fl. URSS II: 297, Tab. XXIII-1.

Lataband, Mullaomur (June 15, 1955 S. K.), Doab (July 10, 1955 S. K.).

Distr. Central Asia, Iran, Afghanistan, Pakistan.

Eragrostis bipinnata (L.) K. Schum. in Engl. Pflanzenwelt Ost. Afr. C: 113 (1895).

Eragrostis cynosuroides Beauv., Agrost. 71, 162 (1812).—Boiss., F. O. V: 583.—Aitch., T. L. S. n. III: 124.

Sarobi (June 16, 1955 S. K.).

Distr. North Africa, Arabia, Afghanistan, Pakistan, India, Burma.

Eragrostis ciliaris Link, Enum. Hort. Berol. I: 192 (1827).—Stapf in Hooker f., F. B. I. VII: 314.

Eragrostis plumosa Boiss., F. O. V: 582, non Link.

Distr. Pantropic.

Eragrostis megastachya (Koel.) Link, Hort. Berol. I: 187 (1827).—Boiss., F. O. V: 580.—Roshev. in Fl. URSS II: 316, Tab. XXIV-8.

Distr. Cosmopolitan.

Eragrostis poaeoides P. Beauv., Agrost. 162 (1812).—Boiss., F. O. V: 580.—Aitch., T. L. S. n. III: 124.

Eragrostis minor Host, Icon. Gram. Austr. IV: 15 (1809).—Paulsen, l. c. 169.

Kandahar (June 9, 1955 S. K.), Nuristan: between Seprigal and Voma (July 29, 1955 S. K.).

Distr. Cosmopolitan.

Eragrostis tremula (Lam.) Hochst. ex Steud., Syn. Glum. 260.—Boiss., F. O. V : 581.—Stapf in Hooker f., F. B. I. VII : 320.

Distr. North Africa, Afghanistan, Pakistan, India, Burma.

Eremopyrum Buonapartis (Spreng.) Nevski in Fl. URSS II : 663, Tab. XLIIa-8 (1934).

Agropyrum squarrosum Jaub. et Spach, Ill. Or. IV t. 320 (1850-3).—Boiss., F. O. V : 668.

Lataband, Mullaomur (June 15, 1955 S. K.).

Distr. Mediterranean Region, Caucasus, Central Asia, Asia Minor, Arm.—Kurd., Iran, Afghanistan, Pakistan.

Eremopyrum orientale (L.) Jaub. et Spach, Ill. Pl. Or. IV : 26 t. 319 (1850-3).—Nevski, l. c. 664, Tab. XLVIIa-9.

Agropyrum orientale Roem. et Schult., Syst. II : 757 (1817).—Boiss., F. O. V : 668.

Lataband, Mullaomur (June 15, 1955 S. K.).

Distr. Europe, North Africa, Caucasus, W. Siberia, Central Asia, Arm.—Kurd., Iran, Afghanistan, Pakistan.

Eremopyrum triticeum (Gaertn.) Nevski in Fl. URSS II : 662, Tab. XLVIIa-7 (1934).

Agropyrum prostratum Beauv., Ess. Agrost. 102, 146 (1812).—Boiss., F. O. V : 667.—Aitch., T. L. S. n. III : 126.

Agropyrum triticeum Gaertn., Nov. Comm. Petrop. XIV : 540 (1770).

Distr. E. Europe, Caucasus, Central Asia, Balk.—Asia Minor, Arm.—Kurd., Afghanistan.

Erianthus fulvus Nees ex Steud., Syn. Glum. I : 409 (1855).—Roshev., l. c. 125 (1928).

Distr. Himalayas.

Erianthus Griffithii Hooker f., F. B. I. III : 122 (1897).

Saccharum Griffithii Munro ex Aitch., J. L. S. XIX : 191.—Boiss., F. O. V : 453.

Saccharum Sara Aitch. (non Roxb.), l. c.—Boiss., F. O. V : 453.

Distr. Pakistan, Afghanistan (Kuram).

Erianthus Ravennae (L.) Beauv., Agrost. 14 (1812).—Boiss., F. O. V : 454.—Aitch., T. L. S. n. III : 122.—Hooker f., F. B. I. VII : 121.

Distr. sp. Mediterranean Region, Caucasus, Central Asia, Iran, Afghanistan, Pakistan, India, Himalaya : from Kashmir to Kumaon.

Festuca arundinacea Schreb., Spicil. Fl. Lips. 57 (1771).—Roshev., l. c. 126 (1928).

Distr. Eurasia. Introduced into N. America.

Festuca elatior L., Sp. Pl. 75 (1753).

Shibar Pass (June 24, 1955 S. K.).

Distr. Europe, Caucasus, Siberia, Central Asia. Afghanistan, Iran.

Festuca gigantea (L.) Vill., Hist. pl. Dauph. II: 110 (1787).—Boiss., F. O. V: 632.—Krecz. et Bobrov in Fl. URSS II: 534, Tab. XL-23.

Nuristan: Chatrass (Aug. 2, 1955 S. K.).

Distr. Europe, North Africa, Siberia, Caucasus, Central Asia, Himalaya: from Kashmir to Kumaon.

Festuca Griffithiana (St.-Yves) Kriv. in Not. Syst. URSS XVII: 70, Fig. 1 (1955).

Festuca subspicata Lipsky var. *Griffithiana* St.-Yves in Rev. Breton. Bot. II: 95 (1927).

Distr. Afghanistan: Prov. Kandahar, between Kerman and Askerat.

Festuca Myuros L., Sp. Pl. 741 (1753).

Vulpia Myuros C. Gmel., Fl. Bad. I: 8 (105).—Boiss., F. O. V: 628.

Distr. Europe, North Africa, W. Asia.

Festuca ovina 7. **remota** Hackel ex Boiss., F. O. V: 619.

Distr. Afghanistan.

Festuca sulcata Hack., Monogr. Fest. Europ. 215 (1882)—Roshev., l. c. 126 (1928).

Distr. Europe to C. Asia.

Fingerhuthia affghanica Boiss., F. O. V: 569.—Hooker f., F. B. I. VII: 306.

Distr. Pakistan (Kuram, Panjab).

Glyceria plicata Fries Mantissa III: 176 (1842).—Boiss., F. O. V: 614.

Kabul, West (July 22, 1955 S. K.), Pagman (July 22, 1955 S. K.).

Distr. Europe, Caucasus, W. Siberia, Central Asia, Asia Minor, Iran, Afghanistan, Dz.-Kashg.

Henrardia persica (Boiss.) C. E. Hubbard in Kew Bull. 1946: 17.

Lepturus persicus Boiss., Diagn. Ser. I, XIII: 71 (1853), F. O. V: 685.—Aitch., T. L. S. n. III: 127.

Distr. Iran, Afghanistan, Pakistan.

Heteranthelium piliferum Hochst. in Kotschy, Pl. Alepp. exs. (1843).—Boiss., F. O. V: 627.

Agropyrum piliferum Benth. ex Aitch., T. L. S. n. III: 126.

Distr. Eastern Mediterranean Region, Caucasus, Central Asia, Iran: Mador Shah (June 29, 1955 H. Kihara), Afghanistan.

Heteropogon contortus (L.) Beauv. ex Roem. et Sch., Syst. II: 836 (1817).—Boiss., F. O. V: 461.

Distr. Pantropic.

Hordeum bulbosum L., Amoen. Acad. IV: 304. (1759).—Roshev., l. c. 126.

Distr. From Africa to Afghanistan.

Hordeum leporinum Link in Linnaea IX: 133 (1934).—Nevski in Fl. URSS II: 726.

Hordeum murinum sensu Aitch., T. L. S. n. III: 127, non L.

Kandahar (June 8, 1955 S. K.).

Distr. Europe, North Africa, Caucasus, Central Asia, Iran Afghanistan, Pakistan, Kashmir.

Hordeum marinum Huds., Fl. Angl. 2. ed. 57 (1778).

Hordeum maritimum With., Bot. Arr. Veg. Brit. 2 ed. I : 127 (1787).—Roshev., l. c. 126.

Distr. W. Europe and Mediterranean countries. Introduced into N. Amer.

Hordeum secalinum Schreb., Spicil. Fl. Lips. 148 (1771).—Paulsen, l. c. 177.

Distr. W. and S. Europe to N. W. Africa.

Hordeum spontaneum C. Koch in Linnaea XXI : 430 (1948).—Hooker f., F. B. I. VII : 372.—Nevski in Fl. URSS II : 727, Tab. L-13.

Hordeum Ithaburense Boiss., Diag. Ser. I, XIII : 70 (1853).—Aitch., T. L. S. n. III : 127.

Distr. Eastern Mediterranean Region, Iran. Caucasus, Central Asia, Afghanistan.

Hordeum vulgare L., Sp. Pl. 84 (1953).

Hordeum coeleste Viborg ex Kunth, Enum. Pl. I : 455 (1833).—Paulsen, l. c. 177.

Nuristan : Between Kushimaicot and Pushuki (Aug. 3, 1955 S. K.)—cultivated, between Pronz and Eschtaway (Aug. 5, 1955 S. K.)—cultivated.

Distr. Said to be a native of south eastern China.

Imperata cylindrica (L.) P. Beauv., Agrost. 165 t. 5 (1812).—Boiss., F. O. V : 452.

Sarobi (June 16, 1955 S. K.).

Distr. Europe, North Africa, Caucasus, Central Asia, Asia Minor, Iran, Afghanistan.

Koeleria phleoides (Vill.) Pers., Syn. I : 97 (1805).—Boiss., F. O. V : 572.—Domin in Bibl. Bot. Heft LXV : 256 (1907).

Lophochloa phleoides (Vill.) Reich., Fl. Germ. Excurs. 42 (1830).

Trisetaria phleoides Nevski in Fl. et Syst. IV : 339 (1937).

Distr. Europe, North Africa, Caucasus, Central Asia, Iran, Afghanistan, Pakistan, Kashmir.

Koeleria cristata var. *tenuifolia* Boiss., F. O. V : 575 was reported from Afghanistan. Domin treats this as *planta dubia* in Bibl. Bot. Heft LXV : 295.

Lamarckia aurea (L.) Moench, Meth. 201 (1794).—Boiss., F. O. V : 570.—Hooker f., F. B. I. VII : 307.

Distr. Mediterranean Region, Iran, Afghanistan.

Lasiagrostis Caragana Trin. et Rupr. in Mém. Acad. Pétersb. sér. 6, VII, 2 : 90 (1842).—Boiss., F. O. V : 506.—Roshev. in Fl. URSS II : 72, Tab. VI-10-12.

Achnatherum caragana Nevski in Flora et Syst. IV : 337 (1937).

Distr. Caucasus, Ilt., Central Asia, Iran, Afghanistan, Dz.-Kashg.

Lasiagrostis Jacquemontii (Jaub. et Spach) Munro ex Boiss., F. O. V : 506.

Stipa Jacquemontii Jaub. et Spach, Ill. Or. t. 339.

Distr. Afghanistan (Kuram), Kashmir.

Lasiagrostis splendens (Trin.) Kunth, Rev. Gram. I: 58 (1829).

Stipa splendens Trin. in Spreng., Neue Ent. II: 54 (1821).—O. Paulsen, Pl. Olufsen's Pamir Exped. 163 (1903).

Distr. E. Europe to India and Mongolia.

Leucopoa sclerophylla (Boiss. et Hohen.) V. Krecz. et Bobr. in Fl. URSS II: 497, Tab. XXXIX-3 (1934).

Festuca spectabilis var. *sclerophylla* Boiss., F. O. V: 625 (1884).

Distr. Caucasus, Iran, Afghanistan.

Lolium loliaceum (Bory et Chaub.) Hand.-Mzt. in Ann. Natur. Hofmuseum XXVIII: 32 (1914).—Nevski in Fl. URSS II: 551, Tab. XLIV-7.

Kandahar (June 6, 1955 S. K.).

Distr. Mediterranean Region, Asia Minor, Caucasus, Afghanistan.

Lolium perenne L., Sp. Pl. 83 (1753).—Aitch., T. L. S. n. III: 126.—Nevski, l. c. 552, Tab. XLIV-9.

Distr. Europe, Caucasus, W. Siberia, Central Asia, Asia Minor, Iran, Afghanistan, Pakistan: Muree (May 27, 1955 S. Nakao), Kashmir.

Lolium persicum Boiss. et Hoh., Diagn. Ser. I, XIII: 66 (1853), F. O. V: 680.—Aitch., T. L. S. n. III: 126.—Nevski, l. c. 548, Tab. XLIV-5.

Distr. Caucasus, Central Asia, Arm.-Kurd., Iran, Afghanistan, Pakistan: Gilgit 1500m (May 31, 1955 S. Nakao).

Lolium temulentum L., Sp. Pl. 83 (1753).—Boiss., F. O. V: 681.—Nevski, l. c. 546, Tab. XLIV-1.

Between Doab and Pulikhumri (June 26, 1955 S. K.), Kandahar in wheat field (June 6, 1955 S. K.).

Distr. Europe, North Africa, W. Siberia, Caucasus, Asia Minor, Iran, Afghanistan, Pakistan, W. Himalaya.

Melica breviflora Boiss., Diag. Ser. I, VII: 124 (1846).—Lavrenko in Fl. URSS II: 344, Tab. XXVI-10.

Melica Cupani δ . *breviflora* Boiss., F. O. V: 590.

Distr. Caucasus, Central Asia, Arm.-Kurd., Iran, Afghanistan, Pakistan: Karakoram, along Minapin Glacier (Aug. 21, 1955 S. Nakao).

Melica ciliata L., Sp. Pl. 66 (1753) was reported by Aitchison (T. L. S. n. III: 124) from Badghis.

Melica inaequiglumis Boiss., Diag. Ser. I, VII: 124 (1846).—Lavrenko, l. c. 343, Tab. XXVI-11.

Between Sarobi and Kabul, ubiquitous on dry hills (June 18, 1955 S. K.), Lataband Mullaomur (June 15, 1955 S. K.).

Distr. Caucasus, Central Asia, Arm.-Kurd., Iran, Afghanistan.

Melica persica Kunth, Gram. 351 (1835).—Lavrenko, l. c. 343.

Melica Cupani v. *vestita* Boiss., F. O. V: 591.

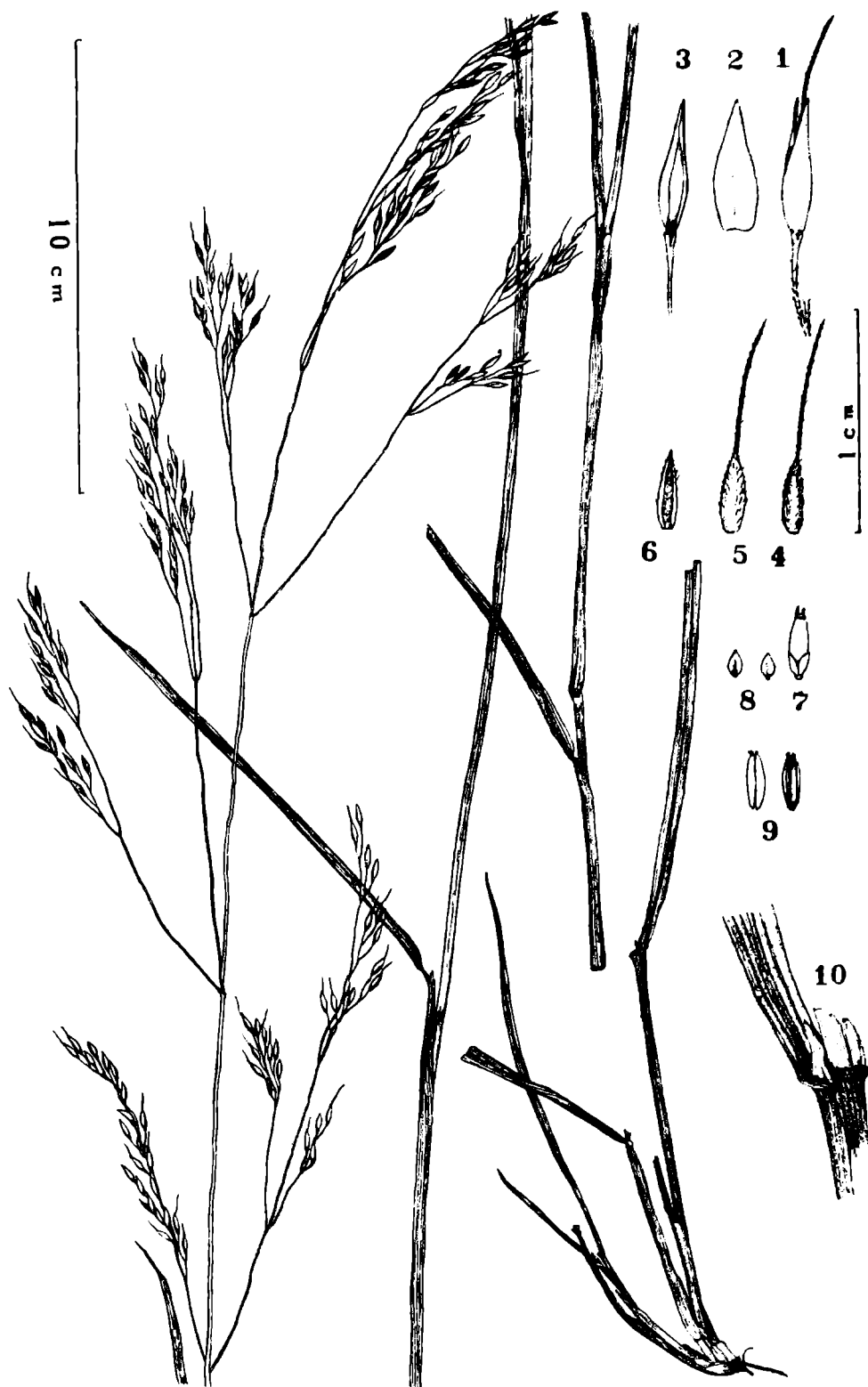


Fig. 42. *Oryzopsis geminiramula* Ohwi: 1 Spikelet, 2 Outer Glume, 3 Inner Glume, 4 Lemma, 5 Opened Lemma, 6 Palea, 7 Ovary with lodicules, 9 Anthers, 10 Ligule. (Nuristan: Voma).

Distr. Central Asia, Arm.-Kurd., Iran, Afghanistan, Pakistan : Chaman Pass (May 31, 1955 K. Yamashita).

Melica secunda Regel in Acta Horti Petrop. VII : 629 (1880).—Boiss., F. O. V : 352.—Lavrenko, l. c. 352, Tab. XXVI-6.

Melica gracilis Aitch. et Hemsl., J. L. S. XIX : 192.

Distr. Central Asia, Afghanistan, Iran.

Oryza sativa L., Sp. Pl. 333 (1753).

Distr. A native of tropical Asia, extensively cultivated in Afghanistan, up to about 1000 m from the sea level.

There are many races. Among others, the race with elliptical seeds which are sticky when boiled is interesting for the Japanese botanists.

Oryzopsis angustifolia (Boiss.) Kitamura comb. nov.

Piptatherum angustifolium Boiss., F. O. V : 508 (1884).

Distr. Afghanistan (Kuram).

Oryzopsis coerulescens (Desf.) Hack. in Denk. Akad. Wien I : 75 (1885).—Roshev. in Fl. URSS II : 114, Tab. V-11.

Piptatherum coerulescens P. Beauv., Agrost. 18, 173 (1812).—Boiss., F. O. V : 507.

Distr. Mediterranean Region, Central Asia, Iran, Afghanistan, Pakistan : Quetta, preserved forest (May 27, 1955 S. K.).

Oryzopsis geminiramula Ohwi in Acta Phytotax. Geobot. XVII : 14 (1957).
Fig. 42.

Gramen perenne pallide virens glabrum : rhizoma caespitosum (?). Culmi ca. 80 cm alti infra medium 3-nodi. Foliorum vaginæ teretes striate, internodiis subaequantes, scaberulae, 8–15 cm, summa usque ad 20 cm longa, ligula elongato-ovata glabra laevis, 2–3.5 mm longa, acutiuscula, albo-hyalina, laminae planiusculae lineares 8–10 cm longae 3–4 mm latae, subtus laeves, supra glaucae et scaberulae saepe incurvae. Panicula exserta, valde effusa, ca. 30 cm longa, nodis distantibus, ramis geminis subaequalibus, 10–13 cm longis, tenuibus, a medio sursum laxè ramulosis et pluri-spiculosis, ramulis laxè fasciculatim erectis, spiculis anguste ovatis acuminatis, ca. 5 mm longis, pedicelli apice laevi et eximie incrassati. Glumae aequales membranaceae glauco-virentes acuminatae, tenuiter 5-nerves, superne $1\frac{1}{3}$ – $1\frac{1}{4}$ purpurascentes, lemma anguste ovatum nitidulum fusco-nigrum, breviter acuminatum, praeter dorsum adpressè albopilosum, apice arista recta tenui scaberula ca. 7 mm longa facile decidua terminatum.—Diversa ab *O. purpurascente*, ligula 2–3 mm longa, paniculae ramis geminis a medio usque laxè ramulosis pluri-spiculosis, spiculis 5 mm longis, pedicellis apice laevibus eximie incrassatis, flosculis 3.5 mm longis laxè molliterque pilosis, dorso glabris.

Nuristan : Voma (July 30, 1955 S. K.).

Distr. Afghanistan.

Oryzopsis holciformis (M. B.) Hackel, l. c. 75 (1885).—Roshev., l. c. 114,

Tab. V-12.

Nuristan : Between Seprigal and Voma (July 29, 1955 S. K.).

Distr. Balk.-Asia Minor, Arm.-Kurd., Iran, Caucasus, Central Asia, Afghanistan, Dzung.-Kashg.

Oryzopsis molinioides (Boiss.) Hackel ex Paulsen in Kjoeb. Vidensk. Meddel. (Pl. Olufsen's Pamir Exped.) 165 (1903).—Roshev., l. c. 117, Tab. V-18.

Piptatherum molinioides Boiss., Diag. Ser. I, VII : 121 (1846), F. O. V : 509.

Nuristan : Chatrass (Aug. 3, 1955 S. K.).

Distr. Caucasus, Central Asia, Iran, Pakistan, Himalaya : from Kashmir to Kunawar, Dz.-Kashg.

Oryzopsis Vavilovi Roshev. in Bull. Appl. Bot. Gen. Pl. Breed. XIX : 123, fig. in p. 124 (1928).

Distr. Nuristan : Voma.

Panicum antipodale Retz., Obs. IV : 17 (1786).—Boiss., F. O. V : 440.—Hooker f., F. B. I. VII : 52.

Sarobi (June 16, 1955 S. K.).

Distr. Africa, Afghansitan, Pakistan, India, Tropical Australia.

Panicum maximum Jacq., Ic. Fl. Rar. I t. 13 (1786).—Boiss., F. O. V : 439 (var. β).

Distr. A native of Africa, cultivated in India.

Panicum miliaceum L., Sp. Pl. 58 (1753).—Boiss., F. O. V : 441.—Hooker f., F. B. I. VII : 45.

Nuristan : Between Voma and Trokikorl (July 31, 1955 S. K.)—cult., between Kushimaicot and Pushuki (Aug. 3, 1955 S. K.)—cult., between Doab and Pulikhumri (June 26, 1955 S. K.)—cult.

Distr. Largely cultivated in Eurasia from prehistoric times.

Pennisetum ciliare (L.) Link, Hort. Berol. I : 213 (1827).—Boiss., F. O. V : 445. Sarobi (June 16, 1955 S. K.).

Distr. Mediterranean Region, Iran, Afghanistan, Himalaya, India.

Pennisetum dichotomum Delile, Fl. Égypte 159, t. 8, f. 1 (1824).—Boiss., F. O. V : 444.—Parsa, Fl. Iran V : 521.

15km east from Kandahar (June 6, 1955 S. K.).

Distr. North Africa, Arabia, Iran, Afghanistan, Pakistan,

Pennisetum flaccidum Griseb. in Goett. Nachr. 86 (1868).—Hooker f., F. B. I. VII : 84.

Nuristan : Between Seprigal and Voma (July 29, 1955 S. K.), between Voma and Trokikorl (July 31, 1955 S. K.).

Distr. Afghanistan, Pakistan, Pam.-Al., Himalaya : from Kashmir to Nepal, Dz.-Kashg., Mongolia.

Pennisetum lanatum Klotzsch in Bot. Erg. Waldem. Reise 65 t. 99 (1862).

Nuristan : Chatrass (Aug. 2, 1955 S. K.), between Kushimaicot and Pushuki (Aug.

3, 1955 S. K.).

Distr. Afghanistan (E), W. Himalaya, W. Tibet.

Pennisetum orientale Rich. in Pers., Syn. I : 72 (1805).—Boiss., F. O. V : 445.
Pulikhumri (July 3, 1955 S. K.).

Distr. Eastern Mediterranean Region, Caucasus, Asia Minor, Arm.—Kurd., Central Asia, Afghanistan, Pakistan, Himalaya : from Kashmir to Kumaon, India.

Phalaris minor Retz., Obs. III : 8 (1783).—Boiss., F. O. V : 472.—Aitch., T. L. S. n. III : 123.

Distr. Mediterranean Region, Caucasus, Central Asia, Iran, Afghanistan, Himalaya : from Kashmir to Nepal, India, S. Africa.

Phleum commutatum Gaud. in Alpina III : 4 (1808).

Phleum alpinum β . *commutatum* Boiss., F. O. V : 484.

Nuristan : Between Pushuki and Kushitaki (Aug. 4, 1955 S. K.).

Distr. Europe, Caucasus, Iran, Afghanistan.

Phleum graecum Boiss. et Heldr. in Boiss., Diagn. Pl. Or. Nov. Ser. I, XIII : 42 (1853).—Roshev., l. c. 125.

Distr. E. S. Europe to C. Asia and India.

Phleum paniculatum Huds., Fl. Angl. 1 ed. 130, Tab. IX-4 (1762).

Phleum asperum Vill., Fl. Delph. II : 61, Tab. 2, f. 4 (1787).—Boiss., F. O. V : 481.

var. **ciliatum** (Boiss.).

Ph. asperum β . *ciliatum* Boiss., l. c. 482 (1884).

Distr. sp. Europe, Caucasus, Central Asia, Asia Minor, Iran, Afghanistan.

Phragmites communis Trin., Fund. Agrost. 134 (1820).—Aitch., T. L. S. n. III : 124.

Distr. Cosmopolitan.

Phragmites Karka (Retz.) Trin. ex Steud., Nom. 2 ed. II : 324 (1841).—Hooker f., F. B. I. VII : 304.

Kunduz (July 7, 1955 S. K.)—sterile.

Distr. Afghanistan, Pakistan, India, China, Japan, Malaysia, Australia.

Poa Aitchisonii Boiss., F. O. V : 602 (1884).

Distr. Afghanistan (Kuram), Pakistan.

Poa bulbosa L., Sp. Pl. 70 (1753).—Boiss., F. O. V : 605.—Aitch., T. L. S. n. III : 125.

Distr. Europe, North Africa, Caucasus, W. Siberia, Central Asia, Iran, Afghanistan, Himalaya : from Kashmir to Zanskar, Dz.—Kashg.

Poa glauca Vahl, Fl. Dan. fasc. 17 : 3 (1790).

Poa caesia Smith, Fl. Brit. 103 (1800).—Boiss., F. O. V : 607.

Distr. Northern Hemisphere (Arctic or alpine reg.).

Poa nemoralis L., Sp. Pl. 69 (1753).—Boiss., F. O. V : 607.

Distr. Eurasia.

Poa soongarica Boiss., F. O. V : 611.—Aitch., T. L. S. n. III : 125.

Eremopoa soongarica Roshev. in Fl. URSS II : 431, Tab. XXXII-11.

Distr. Caucasus, W. Siberia, Central Asia, Afghanistan, Tibet ?

Poa trivialis L., Sp. Pl. 67 (1753).—Boiss., F. O. V : 602.—Aitch., T. L. S. n. III : 125.

Bamian (June 24, 1955 S. K.).

Distr. Europe, W. Asia.

Polypogon fugax Nees in Steud., Syn. Pl. Glum. 184 (1855).

Kandahar, Arghandab (June 7, 1955 S. K.).

Distr. Africa, Asia Minor, Afghanistan, India, Central Asia, Siberia, India, China, Japan.

Polypogon maritimum Willd. in Neue Schr. Ges. Nat. Fr. Berl. III : 442, 443 (1801).—Boiss., F. O. V : 520.

Distr. Europe, North Africa, Caucasus, W. Siberia, Central Asia, Iran, Afghanistan, Dz.-Kashg., Pakistan.

Polypogon monspeliensis (L.) Desf., Fl. Atl. I : 67 (1800).—Boiss., F. O. V : 520.

Distr. Cosmopolitan.

Psathyrostachys Kronburgii (Hack.) Nevski in Fl. URSS II : 713.

Nuristan : Shabul Gul (Aug. 6, 1955 S. K.).

Distr. Central Asia, Afghanistan (E).

Puccinellia distans (L.) Parl., Fl. Ital. 367 (1848) sensu lat.

Atropis distans (L.) Griseb. in Ledeb., Fl. Ross. IV : 388 (1853).

Kabul (June 22, 1955 S. K.).

Distr. Europe, Asia Minor, Caucasus, W. Siberia.

Psathyrostachys juncea (Fisch.) Nevski, in Komar., Fl. URSS II : 714 (1934).

Elymus junceus Fisch. in Mém. Soc. Nat. Mosc. I : 45 (1806).—Boiss., F. O. V : 690.

Distr. E. Europe, W. Siberia, Central Asia, Iran, Afghanistan, Dz.-Kashg.

Roegneria nuristanica Ohwi in Acta Phytotax. Geobot. XVII : 14 (1957).

Gramen perenne gracile, rhizoma breviter ascendens caespitosum. Culmi 50–60 cm alti, glabri laeves, ad medium usque remote 3-4-nodosi, basi vaginis emortuis membranaceis brevibus paucis vestiti. Folia culmea glabra, vaginae arctae internodiis paullo breviores, summa longissima ca 15 cm longa, ore saepe atropurpureo-tincto, inferiores saepe ad apicem auriculatae, ligula brevissima, laminae pallide virentes firmulae laeviusculae 10–15 cm longae 2–3 mm latae, laxae involutae, inferiores breviores. Spicae graciles erectae ca. 15 cm longae, praeter spiculam imam remotam laxiuscule 7-8-spiculosae, rhachi tenui, spiculae sessiles erectae 17–20 mm longae 4–6-florae, pallide virentes, basi callo brevi albido scabro ornatae, glumae lineari-lanceolatae scabrae,



Fig. 41. *Roegneria nuristanica* Ohwi: 1 Spikelet, 2 Outer Glume, 3 and 4 Lemma, 5 Palea, 6 Lodicule, 7 Ovary and Stamen. (Nuristan: Between Seprigal and Voma).

elevatim sub-7-nerves, sursum sensim attenuato-brevi-aristatae, integrae, 1ma 13 mm, 2da 15mm longae, ca 1.5 mm latae. Lemma lanceolatum scabrum 12-13 mm longum, superne sensim angustatum in aristam tenuem rectam pallide virentem 2-2.5 cm longam, callo piloso-scabro, palea quam lemma paullo brevior lineari-oblonga, apice subrotundata, carina superne ciliolato-scabra, infra medium laevis.—Affinis *R. Drobovii* Nevski, sed planta graciliori, foliis angustis laxe involutis, spiculis brevioribus, glumis angustis, palea quam lemma paullo sed distincte brevior, apice subrotundata.

Nuristan: Between Seprigal and Voma (July 29, 1955, S. K.).

Distr. Afghanistan.

Roegneria semicostata (Nees) Kitagawa, Lineamenta Fl. Manshur. 91 (1939).

Agropyron semicostatum Nees ex Steud., Synops. Glum. I: 346 (1854).—Boiss., F. O. V: 662.

Distr. Afghanistan (Kuram), Pakistan, Himalaya: from Kashmir to Sikkim.

Saccharum spontaneum L., Mant. II: 183 (1771).

Saccharum spontaneum subsp. *indicum* Hack. in DC., Monogr. Phaner. VI: 114 (1889).

Doab (July 11, 1955 S. K.), Nuristan: Voma (July 30, 1955 S. K.).

Distr. Central Asia, Iran, Afghanistan, India.

Secale Cereale L., Sp. Pl. 84 (1753).—Boiss., F. O. V: 671.—Aitch., T. L. S. n. III: 126.

Shishigar (June 10, 1955 S. K.), Shibar Pass (June 24, 1955 S. K.).

Distr. Weed in wheat field.

The native names in Afghanistan, are Gandam-dar, Jow-thak-thak according to Aitchison.

Setaria italica (L.) P. Beauv., Ess. Agrost. 51 (1812).

Nuristan: Between Pushuki and Kushimaicot (Aug. 9, 1955 S. K.)—cult. Voma (July 30, 1955 S. K.)—cult.

Distr. A cultivated plant said to be derived from *Setaria viridis*.

The plants from Pushuki have small inflorescences about 8 cm long 12 mm broad. Those from Voma have larger inflorescences about 18 cm long before their maturity.

Setaria viridis (L.) P. Beauv., Ess. Agrost. 51 (1812).—Boiss., F. O. V: 443.

Kandahar (June 8, 1955 S. K.), between Doab and Pulikhumri (June 26, 1955 S. K.).

Distr. Eurasia, North Africa, naturalized in America.

Sorgum bicolor (L.) Moench, Meth. Pl. 207 (1794).

var. **Arduini** (Koern.) Snowden in Kew Bull. 1935, 236.

Nuristan: Voma (July 30, 1955 S. K.)—cultivated.

Distr. Cultivated plant.

Sorgum halepense (L.) Pers., Syn. Pl. I: 101 (1805).—Boiss., F. O. V: 459.

Sarobi (June 16, 1955 S. K.), Kandahar (June 6, 1955 S. K.).

Distr. A native of the Mediterranean Region, now widely distributed in the tropical

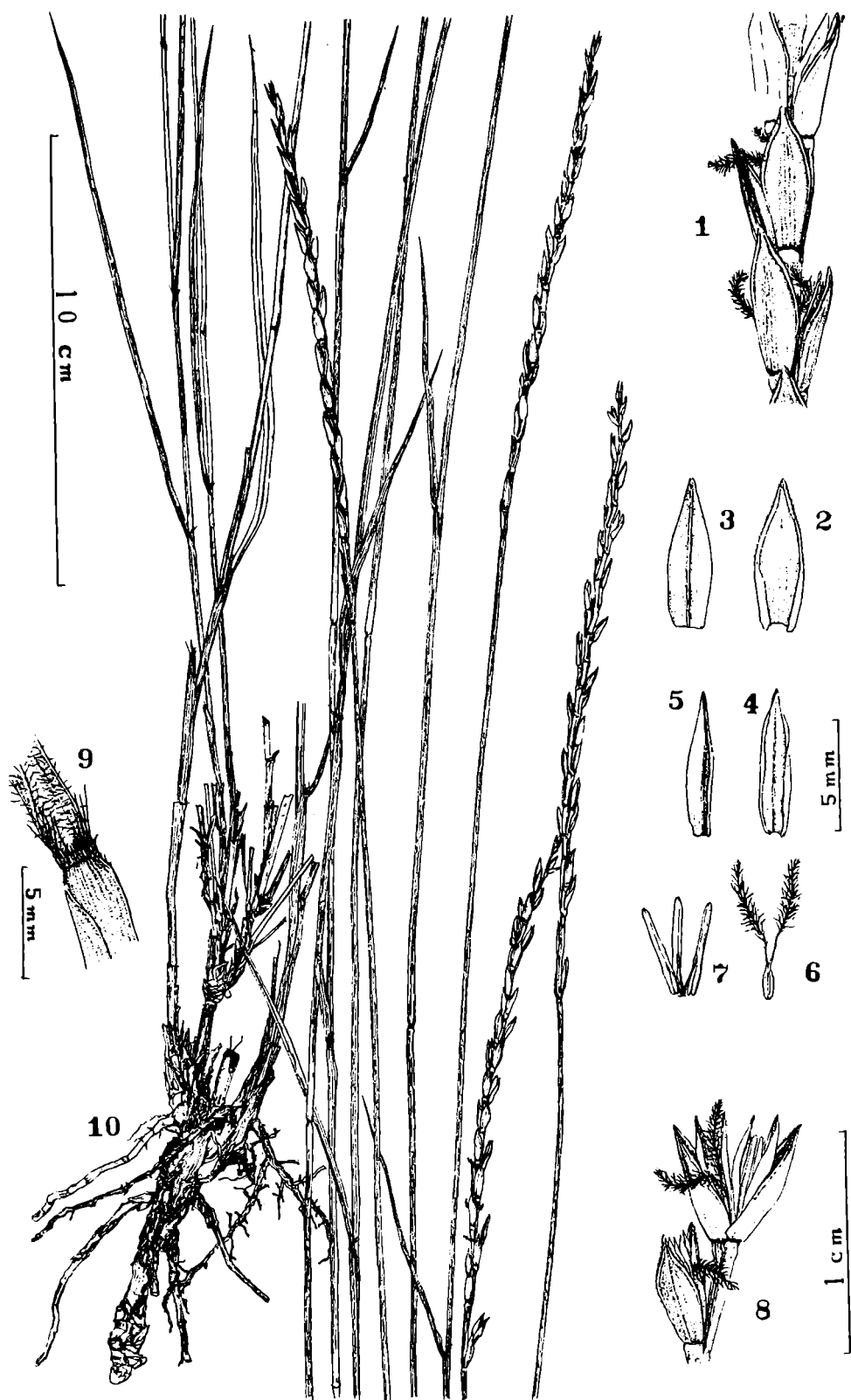


Fig. 43. *Thyrsia viridula* Ohwi: 1 Spike, 2 Outer Glume, 3 Inner Glume, 4 Lemma, 5 Palea, 6 Pistil, 7 Stamens, 8 Spikelet, 9 Ligule, Caudex. (Nuristan: Between Seprigal and Voma).

and warm regions.

Sporobolus commutatus (Trin.) Kunth, Enum. Pl. I: 214 (1833).—Boiss., F. O. V: 513.

Distr. Tropical Africa and Asia.

Stipa barbata Desf., Fl. Atl. I: 97 (1798).—Roshev., l. c. 125.

Distr.: N. Africa.

Stipa pamirica Roshev. in Not. Syst. Herb. Kom. URSS XI: 20 (1949).

Distr. Afghanistan: Wakhan, Ischkaschim, Schugnan.

Stipa pennata L., Sp. Pl. 78 (1753).—Boiss., F. O. V: 502.—Aitch., T. L. S. n. III: 123.

Distr. Europe, North Africa, Siberia, Asia Minor, Caucasus, Afghanistan.

Stipa sibirica Lamk., Ill. I: 158 (1791).—Boiss., F. O. V: 499.

Distr. Caucasus, Siberia, Mongolia, Afghanistan.

Stipa subbarbata Roshev. in Bull. Appl. Bot. Gen. Pl. Breed. XIX: 125.

Distr. Afghanistan.

Stipa Szowitsiana Trin. in Hoh. Talysch. in Bull. Soc. Nat. Mosc. 1838, 243.

Distr. Caucasus, Central Asia, Arm.—Kurd., Iran, Dzung.—Kashg., Pakistan: Chaman (May 31, 1955 S. K.).

Taeniatherum crinitum (Schreb.) Nevski in Acta Univ. As. Med. ser. VIII b, Bot. Fasc. 17: 38 (1938).

Hordeum crinitum (Schreb.) Desfontaine, Fl. Atl. I: 113 (1798).

Hordeum Caput-Medusae Benth. et Hooker f. ex Aitch., T. L. S. n. III: 127.

Distr. Mediterranean Region, Caucasus, Central Asia, Iran, Afghanistan, Pakistan: Quetta, preserved forest (May 27, 1955 S. K.).

Themeda anathera (Nees ex Steud.) Hackel in DC., Monogr. Phan. VI: 669 (1889).

Anthistiria anathera Nees ex Steud., Syn. Glum. 402 (1855).—Boiss., F. O. V: 461.

Nuristan (1955 S. K.)

Distr. India, Afghanistan.

Thysia viridula Ohwi in Acta Phytotax. Geobot. XVII: 15 (1957). **Fig. 43.**

Gramen perenne glabrum viridulum, rhizoma rigidum laxae caespitosum breviterque repens. Culmi erecti 80–90 cm alti, teretes paucinosi, internodiis inferioribus nodisque albopilosis. Folia culmea 4–6, vaginae inferiores laminis multo, internodiis paullo breviores, summa ca. 10 cm longa, omnes striatae glabrae, ligula brevissima, ciliata, laminae lineares planae 15–30 cm longae 3–5 mm latae, supra pilosulae, subtus glabrae, margine leviter involutae, summa multo brevior. Panicula demum longe exserta erecta, e racemis 1–3 linearibus 7–12 cm longis 4–5 mm latis praeter terminalem brevipedunculatum sessilibus composita viridula, rhachi glabra, triquetra, 6–7 mm longa, ad angulos scaberula. Spiculae sessiles lanceolatae, ca. 7 mm longae 1.5–2 mm

latae, gluma 1ma 2-carinata plurinervis, in carinaque scaberulis, 2da aequilonga 1-carinata acutiuscula, laevis.—Differt a *Th. Zea*, culmo multo humili, foliis laxè involutis magis angustis, racemis 1–3.

Nuristan : Voma (Jul. 30, 1955 S. K.), Eschtaway (Aug. 6, 1955 S. K.), between Seprigal and Voma (Jul. 29, 1955 S. K.).

Distr. Afghanistan.

Trachynia distachya (L.) Link, Hort. Berol. I: 43 (1927).

Brachypodium distachyum (L.) R. et Sch., Syst. II: 741 (1817).—Boiss., F. O. V: 657.

Distr. Mediterranean Region, Iran, Afghanistan.

Tragus racemosus (L.) All., Fl. Pedem. II: 241 (1785).—Boiss., F. O. V: 450.

Distr. Europe, Egypt, Afghanistan, India.

Tricholaena Teneriffae (L. f.) Parl. in Webb & Bert., Phys. Conar. III: 425 (1836–50).

Panicum Teneriffae (L. f.) R. Br., Prodr. I: 189 (1810).—Boiss., F. O. V: 434.

Distr. Mediterranean Region, Arabia, Afghanistan, Pakistan.

Trisetum Cavanillesii Trin. in Mém. Acad. Sci. St. Pétersb. VI, I: 63 (1830)—Roshev, l. c. 126.

Distr. W. and S. Europe to Caucasus and C. Asia.

Triticum aestivum L., Sp. Pl. 85 (1753).

Triticum vulgare Vill., Hist. Pl. Dauph. II: 153 (1787).—Aitch., T. L. S. n. III: 126.

Nuristan : Between Kushimaicot and Pushuki (Aug. 3, 1955 S. K.)—cultivated.

Distr. A cultivated plant derived from the hybridation between *T. dicoccoides* and *Aegilops squarrosa*. In Afghanistan, *T. aestivum* is extensively cultivated. The native name is Gandam (Aitchison). The wheat is cultivated up to 3300 m above sea-level, at Shibar Pass.

Triticum durum Desf., Fl. Atl. I: 114 (1789).—O. Paulsen, l. c. 177.

Distr. N. Africa, Afghanistan (cult.).

Zea Mays L., Sp. Pl. 971 (1753).

Nuristan : Between Kushimaicot and Pushuki (Aug. 3, 1955 S. K.)—cultivated.

Distr. Cultivated plants introduced from America.

Cyperaceae by T. Koyama

Carex (Frigidae) ***atrofusca*** Schkuhr, Riedgr. I: 106, t. Y. f. 82 (1801).

var. ***minor*** (Boott) Kükenthal, Cyper. Caric. 554 (1909).

C. ustulata Wahlb. var. *minor* Boott, Illustr. Carex I: 71, t. 194, f. 1 (1858).

C. oxyleuca V. Krecz. in Fl. URSS III: 284 & 605, t. 17, f. 5 (1935).

Distr. Afghanistan (Kreczetowicz), Pamir, Tibet.

Carex (Digitatae) ***cardiolepis*** Nees in Wight, Contrib. Bot. India 127 (1834).—

Aitchison in Journ. Linn. Soc. XVIII: 105 (1990).—Boott, Illustr. *Carex* I: 6, t. 17 (1858).—Boiss., F. O. V: 409.—C. B. Clarke in F. B. I. VI: 744 (1894).—Kükenth., Cyper. Caric. 490 (1909).

Distr. Afghanistan (Aitchison, Boissier), W. Himalaya, Central China.

Carex (Spirostachyae) **diluta** Marsh. v. Bieb., Fl. Taur. Cauc. II: 388 (1808) & 3: 614 (1814).—Boott, Illustr. IV: 139, t. 448 (1867).—Boiss., F. O. V: 425.—C. B. Clarke in F. B. I. VI: 737, excl. synonym.—Kükenth., Cyper. Caric. 659 (1909).—V. Krecz. in Fl. URSS. III: 394, t. 21, f. 8.—T. Koyama in Acta Phytotax. Geobot. XVII: 46 (1957).

C. fissirostris: Aitch., J. L. S. XIX: 190 (1882).—Boiss., l. c. 427, non Ball.

C. Aitchisonii Böckeler in Flora LXIII: 456 (1880).

Shibar Pass (S. Kitamura 42, 43).

Distr. Afghanistan, Turkestan, Dahuria, Eur. Russia.

Carex (Divisae) **divisa** Hudson, Fl. Angl. 1 ed. 348 (1762).

var. **coarcta** (Boott) T. Koyama comb. nova.

C. curaica Kunth var. *coarcta* (Boott) Boott, Illustr. *Carex* IV: 204 (1867).

C. coarcta Boott in Journ. Linn. Soc. XX: 133 (1846).—V. Krecz. in Fl. URSS III: 128, t. 10, f. 4 (1935).

C. curaica: Boiss., F. O. V: 402, non Kunth.

C. divisa: Boiss., l. c. 401.—C. B. Clarke in F. B. I. VI: 701.—Kükenth., Cyper. Caric. 125 (1909) ex p.

C. divisa Huds. forma *pallidiflora* Kükenth., l. c. 126.

Distr. Afghanistan (Boissier, Kreczetowicz)—Asia Minor, W. Pakistan.

C. coarcta and *C. divisa* are almost akin; comparing the plants from Pakistan with European *C. divisa*, I failed to find any fundamental difference between them. The former, *C. coarcta*, is relatively larger than the latter, culms are more than 7 dm tall in the former and 3 to 5 dm in the latter, the length of perigynia is 4 mm in the former and 3.5 mm in the latter. The bract of inflorescence is more usually present in *C. coarcta*. I treat *C. coarcta* as a Central Asiatic population of Eurasiatic *C. divisa*.

Carex (Hirtae) **fedia** Nees in Wight, Contrib. Bot. India 129 (1834).—V. Krecz. in Fl. URSS III: 417.

C. Wallichiana (non Sprengel, 1826) Presc. ex Nees in Wight, l. c. 129.—C. B. Clarke in F. B. I. VI: 747.

Distr. Afghanistan (Kreczetowicz), India, China, Malaysia.

Carex (Digitatae) **Halleriana** Asso, Synops. Stirp. Arag. 133, t. 9, f. 2 (1779).—Boott, Illustr. IV: 218, t. 415/6 (1867).—C. B. Clarke in F. B. I. IV: 745.—Kükenth., Cyper. Caric. 487 (1909).—V. Krecz. in Fl. URSS III: 355 (1935).

C. gynobasis Vill., Hist. Pl. Dauph. II: 206 (1787).—Boiss., F. O. V: 410.

Distr. Afghanistan (Boissier, Kreczetowicz), Europe, Himalayas, N. Africa.

Carex (Paludosae) **heterostachya** Bunge, Enum. Pl. Chin. Bor. 69 (1832).—Kükenthal, Cyper. Caric. 741 (1909).

C. songorica Kar. & Kir. in Bull. Soc. Natur. Mosc. XV: 525 (1842).—Boiss., F. O. V: 430.—C. B. Clarke in F. B. I. VI: 739.—V. Krecz. in Fl. URSS III: 414, t. 22, f. 10.

C. songorica K. & K. var. *atrata* Litw. in Trav. Mus. Bot. St. Pétersb. VII: 97 (1910).

Distr. Afghanistan (Boissier, Kreczetowicz)—Turkestan, Siberia, N. China, Mongolia, Himalayas.

Carex (Ferrugineae) **hirtella** Drejer, Symb. Caricol. 21 (1844).—Boott, Illustr. I: 11, t. 31 (1858).—Boiss., F. O. V: 324.—C. B. Clarke in F. B. I. VI: 744.—Kükenth., Cyper. Caric. 561/2, f. 92 (1909).

Distr. Afghanistan (Boissier), Pakistan, Tibet.

Carex (Atratae) **infuscata** Nees in Wight, Contrib. Bot. India 125 (1834), propte. excl. β .—V. Krecz. in Fl. URSS III: 270.—T. Koyama in Acta Phytotax. & Geobot. XVII: 46 (1957).

C. alpina Sw. var. *infuscata* Boott, Illustr. III: 113, t. 358 (1862), p. p. maj.

C. alpina: Aitch., J. L. S. XVIII: 104 (1880).—C. B. Clarke in F. B. I. VI: 730, non Sw.

?*C. VahlII* sensu Boiss., F. O. V: 415.

C. alpina Sw. ssp. *infuscata* (Nees) Kükenth., Cyper. Caric. 386 (1909).

Nuristan: Shabul Gul (S. Kitamura 40, 46).

Distr. Afghanistan—Himalayas.

A variety of *C. infuscata* (var. *gracilentia*) with beaked perigynia was seen from Pakistan (T. Koyama 1958), however, this variety was not included in our Afghan collection.

Carex (Incurvae) **maritima** Gunner, Fl. Norv. II: 131 (1772).—V. Krecz. in Bull. Jard. Bot. URSS XXX (1-2): 127, t. 1, f. 3a (1932) et in Fl. URSS III: 189, t. 13, f. 11.

C. incurva Lightf., Fl. Scot. II: 544, t. 24, f. sinistr. (1777).—C. B. Clarke in F. B. I. VI: 700.—Kükenth., Cyper. Caric. 113, f. 22, A-C (1909).

Distr. Afghanistan (Clarke, Kreczetowicz), Himalaya, N. Eurasia, N. & S. America.

Carex (Atratae) **melanantha** C. A. Meyer in Ledeb., Fl. Alt. IV: 216 (1833).—Boiss., F. O. V: 416.—C. B. Clarke in F. B. I. VI: 733.—Kükenthal, Cyper. Caric. 391, f. 61, E—G (1909).—V. Krecz. in Fl. URSS III: 273, t. 16, f. 5.

Distr. Afghanistan (Boissier), Turkestan, Himalayas.

Carex (Frigidae) **nivalis** Boott in Trans. Linn. Soc. XX: 136 (1846), & Illustr. Carex I: 13, t. 35 (1858).—C. B. Clarke in F. B. I. VI: 732.—Kükenth., Cyper. Caric. 551.—T. Koyama Acta Phytotax. Geobot. 17: 100 (1958).

Distr. Afghanistan, West Himalaya, Tibet.

Carex (Paniculatae) **nubigera** D. Don in Trans. Linn. Soc. XIV : 326 (1825).—Boott, Illustr. I : 1, t. 2 (1858).—C. B. Clarke in F. B. I. VI : 702.—Kükenth., Cyper. Caric. 145.—T. Koyama ex Kitamura in Kihara, Fauna & Fl. Nepal Himal. 87. Distr. Afghanistan, India, China, Japan.

Carex (Paludosae) **nutans** Host, Gram. Austr. I : 61, t. 83 (1803).—Reichenb., Icon. t. 265, f. 642 (1864).—Boiss., F. O. V : 429.—Kükenth., Cyper. Caric. 740.

Distr. Afghanistan (Boissier), Asia Minor, Mongolia, N. China, Siberia, Europe.

Carex (Spirostachyae) **Oederi** Retzius, Fl. Scand. Prodr. 179 (1779).

var. **philocrena** (V. Krecz.) T. Koyama stat. nov.

C. philocrena V. Kreczetowicz in Fl. URSS III : 393 & 618 (1935).

C. Oederi : Boiss., F. O. V : 426.—Kükenth., Cyper. Caric. 673, concerning Afghanistan.—T. Koyama in Acta. Phytotax. & Geobot. XVII : 47 (1957), non Retzius.

Nuristan : Between Chatrass and Kushimaicot (S. Kitamura 38).

Distr. Afghanistan, Turkestan.

C. philocrena is Central Asian population of widespread *C. Oederi* Retz., differing therefrom by the number of spikelets (more than 4 in *philocrena*) and slightly larger habit only.

Carex (Acutae-Rigidae) **orbicularis** Boott in Proc. Linn. Soc. I : 254 (1845).—Kükenth., Cyper. Caric. 303.—V. Krecz. in Fl. URSS III : 224.

C. rigida : Boiss., F. O. V : 419.—C. B. Clarke in F. B. I. VI : 771, non Good.

C. caespitosa : Boiss., l. c. 420, ex. p.

Distr. Afghanistan (Boissier, Kreczetowicz), Caucasus, Altai, Himalayas, Tibet.

Carex (Physocarpaceae) **pamirensis** C. B. Clarke ex B. Fedtschenko in Journ. Bot. éd. Sect. Bot. Soc. Nat. St. Pétersb. I : 19 (1906).—Clarke in Kew Bull. Add. Ser. VIII : 87 (1908).—V. Krecz. in Fl. URSS III : 448, t. 23, f. 11.

C. obscuriceps Kükenth. var. *pamirica* (O. Fedtsch.) Kükenth., Cyper. Caric. 724 (1909).

Distr. Afghanistan (Kreczetowicz), Pakistan !

Antedating the name *C. obscuriceps* (1909), *C. pamirensis* is the correct name of this taxon recently found also in our collections from Karakoram and Pakistan (T. Koyama 1957/8).

Carex (Pauciflorae) **parva** Nees in Wight, Contrib. Bot. India 120 (1834).—Boott, Illustr. I : 56, t. 148 (1858).—C. B. Clarke in F. B. I. VI : 712.—Kükenth., Cyper. Caric. 110 (1909).—V. Krecz. in Fl. URSS III : 303.

Distr. Afghanistan (Kreczetowicz), Turkestan, Himalayas, China.

Carex (Physodeae) **physodea** Marsh. v. Bieb. in Mém. Soc. Natur. Mosc. II : 104, t. 7 (1809).—Boott, Illustr. IV : 170, t. 576/7 (1867).—Boiss., F. O. V : 399 (1884).—Kükenth., Cyper. Caric. 119, f. 22, I-L.—V. Krecz. in Fl. URSS III : 194, t. 13, f. 7.

Distr. Afghanistan (Boissier, Kreczetowicz), Turkestan.

Carex (Foetidae) **pseudo-foetida** Kükenth. ex Ostenf. in Bot. Tidskr. XXVIII :

225, f. 1 (1907).—Kükenth., *Cyper. Caric.* 115.—V. Krecz. in *Fl. URSS* III : 191, t. 13, f. 1.—T. Koyama in *Acta Phytotax. et Geobot.* XVII : 47 (1957).

Kabul (S. Kitamura 35, 29), Shibar Pass (S. Kitamura 44).

Distr. Afghanistan, Turkestan, India, Himalyas.

Carex (Indicae) **sanguinea** Boott in *Trans. Linn. Soc.* XX : 137 (1846) et *Illustr.* IV : 157, t. 515 (1867).—Boiss., *F. O.* V : 406.—C. B. Clarke in *F. B. I.* V : 720.—Kükenth., *Cyper. Caric.* 183.

Distr. Afghanistan (Boissier), Pamir.

Carex (Secalinae) **secalina** Wahlenb. in *Veten. Akad. Nya Handl. Stockh.* XXIV : 151 (1803).

var. **alpina** Kükenth. & Bornmüller in *Österr. Bot. Zeitschr.* XLVII : 137 (1897).—Kükenth., *Cyper. Caric.* 681.

Distr. Afghanistan (Bornmüller). Endemic.

The mother species is known from Europe eastwards to Siberia.

Carex (Divisae) **stenophylla** Wahlenb. in *Veten. Akad. Nya Handl. Stockh.* XXIV : 142 (1803).—Aitch., *J. L. S.* XVII : 105.—Boiss., *F. O.* V : 400.—C. B. Clarke in *F. B. I.* VI : 700.—Kükenth., *Cyper. Caric.* 121.

Distr. Afghanistan (Aitchison), Europe, Siberia, Himalaya.

This is a very polymorphous species. I hesitate to divide this taxon into varieties without seeing many characteristic specimens from its total area, though according to Kükenth.'s description, plants from Afghanistan seem to belong to a variety, var. *desertorum* Litw. (in *Allg. Bot. Zeitschr.* V, Beih. I : 56. 1899).

Carex (Ferrugineae) **tristis** Marsh. v. Bieb., *Fl. Taur. Cauc.* III : 615 (1819).—Boiss., *F. O.* V : 423, p. p.—C. B. Clarke in *F. B. I.* VI : 738, excl. syn. *macrogyne*.—Kükenth., *Cyper. Caric.* 569 (1909).—V. Krecz. in *Fl. URSS* III : 288, t. 18, f. 3.

?*C. sempervirens*: Aitch., in *J. L. S.* XVIII : 105 (1880).

Distr. Afghanistan, Asia Minor, Turkestan, Himalayas, Siberia.

Carex (Foetidae) **vulpinaris** Nees in Wight, *Contrib. Bot. India* 121 (1834).—C. B. Clarke in *F. B. I.* VI : 702, ex pte.—Kükenth., *Cyper. Caric.* 117 (1909).

Distr. Afghanistan (Clarke), Turkestan, W. Himalaya.

Carex (Paniculatae) **Wendelboi** Nelm. in *Nytt Magas. for Bot.* I : 21-2, f. 9 (1952).—T. Koyama in *Acta Phytotax. et Geobot.* XVII : 47 (1957).

Nuristan: Shabul Gul (S. Kitamura 52).

Distr. Afghanistan, W. Himalaya.

Cladium **Mariscus** (Linn.) R. Br., *Prodr. Fl. Nov. Holl.* I : 92 (1810).—Boiss., *F. O.* V : 392.—Roshev. in *Fl. URSS* III : 102, t. 5, f. 10.

Distr. Afghanistan (Boissier), Europe, Central Asia.

Cobresia (Elyna) **capillifolia** (Decne.) C. B. Clarke in *Journ. Linn. Soc.* XX : 378 (1783).

var. **filifolia** (Turcz.) Kükenthal in Finska Vet.-Soc. Förhandl. XLV (8) : 1 (1903).
Cob. scirpina : Aitch. in J. L. S. XVIII : 104 (1880) & XIX : 190 (1882), non Willd.

Elyna spicata : Trautv. in Act. Hort. Petrop. V : 122 (1877).—Boiss., F. O. V : 394. p. p., non Schrad.

Distr. Afghanistan (Aitchison), Siberia.

Cobresia (Hemicarex) **laxa** Nees in Wight, Contrib. Bot. Ind. 119 (1834).—T. Koyama in Acta Phytotax. et Geobot. XVII : 47 (1957).

Nuristan : Pushuki to Kushitaki (S. Kitamura 31).

Distr. Afghanistan, Himalayas.

Cobresia (Elyna) **schoenoides** (C. A. Mey.) Steudel, Synops. Pl. Glumac. II : 246 (1855).—Aitch., J. L. S. XIX : 190 (1882).—Clarke in F. B. I. VI : 697.—Kükenth., Cyper. Caric. 35 (1909).—Sergievskaja in Fl. URSS III : 106.

Distr. Afghanistan (Aitchison), Himalayas, Central Asia, Siberia.

Cyperus (Cyperus) **conglomeratus** Rottb., Descr. & Icon. Pl. 21, t. 15, f. 7 (1773).—Boiss., F. O. V : 369 (1884).—C. B. Clarke in F. B. I. VI : 601 (1893).—Kükenthal, Cyper.-Cypereae 272 (1936).

Cyp. pungens Böckl. in Linnaea XXXV : 437 (1868) et ex Aitch., T. L. S. n. III : 121.

Distr. Afghanistan (Boissier, Aitchison), Africa, Madagascar.

Cyperus (Cyperus) **difformis** Linn., Cent. Pl. II : 6 (1756).—Rottb., Descr. & Ic. 24, t. 9, f. 2.—Boiss., F. O. V : 370.—C. B. Clarke in F. B. I. VI : 599.—Kükenth., Cyper.-Cypereae 237 (1936).

Distr. Afghanistan (Boissier), Europe (s. part), N. & Central Africa, India, E. Asia, Malaysia, Pacific Isls., N. Australia, Central America.

Cyperus (Cyperus) **eleusinoides** Kunth, Enum. Pl. II : 39 (1837).—Boiss., F. O. V : 571.—C. B. Clarke in F. B. I. VI : 608.—Suringar, Het. Gesl. Cyperus 128, t. 4, f. 31 (1898).—Kükenthal, Cyper. 144 (1935).

Distr. Afghanistan (Boissier), Africa, S. & E. Asia, Australia.

Cyperus (Pycneus) **flavescens** Linn., Sp. Pl. 47 (1753).—Reichb., Icon. VIII : t. 278, f. 662-4 (1846).—Aitch., J. L. S. XVIII : 104.—Boiss., F. O. V : 364.—Kükenth., Cyper. 398 (1936).

Pycneus flavescens (Linn.) Reichenb., Fl. Germ. Excurs. 72 (1830).—C. B. Clarke in F. B. I. VI : 589.—B. Schischkin in Fl. URSS III : 5 (1935).

Distr. Afghanistan (Aitchison, Boissier), Europe, W. Himalaya, India, S. & E. Asia, Africa, America.

Cyperus (Cyperus) **fuscus** Linn., Sp. Pl. 46 (1753).—Reichb., Icon. VIII : t. 280, f. 667 (1846).—Boiss., F. O. VI : 370.—Clarke in F. B. I. VI : 599.—B. Schischkin, Fl. URSS III : 15, t. 1, f. 1, a-c (1935).—Kükenth., Cyper. 235 (1936).

Distr. Afghanistan (Boissier), Central & S. Europe, Central Asia, E. & SE. Asia,

Atlantic N. America.

Cyperus (Cyperus) **glaber** Linn., Mant. II : 179 (1771).—Boiss., F. O. V : 371.—C. B. Clarke in F. B. I. VI : 606.—B. Schischkin in Fl. URSS III : 16 (1935).—Kükenthal, Cyper. 159 (1935).

Distr. Afghanistan (Aitchison ex Boissier), Central Asia, Eur.—Russia, India, Trop. Africa.

Cyperus (Pycneus) **globosus** Allioni, Fl. Pedem. Auctuar. 49 (1789).—Boiss., F. O. V : 364.—Kükenth., Cyper. 352–4 (1936).

Pycneus globosus (All.) Reichb., Fl. Germ. Excurs. add. 140 (1830).—B. Schischkin, Fl. URSS III : 6 (1935).

Pycneus capillaris Nees in Linnaea IX : 283 (1834).—C. B. Clarke in F. B. I. VI : 591.

Distr. Afghanistan (Boissier), Africa, Eurasia, Australia.

Cyperus (Cyperus) **imbricatus** Retzius, Observ. V : 12 (1789).—Kükenthal, Cyper. 69 (1936) pro pte. maxim.—T. Koyama in Acta Phytotax. et Geobot. XVII : 47 (1957).

Cyperus radiatus Vahl, Enum. Pl. II : 369 (1806).—C. B. Clarke in F. B. I. VI : 617.

Kandahar, Arghandab (S. Kitamura 37).

Distr. Afghanistan, Almost pantropic.

Cyperus (Cyperus) **Iria** Linn., Sp. Pl. 45 (1753).—Boiss., F. O. V : 370.—C. B. Clarke in F. B. I. VI : 606.—B. Schischkin in Fl. URSS III : 18 (1935).—Kükenth., Cyper. 150–151 (1935).

Distr. Afghanistan (Boissier), tropical & warm regions of all world.

Cyperus (Juncellus) **junciformis** Cav., Icon. & Descr. III : 2, t. 204, f. 1 (1794).—Boiss., F. O. V : 367.

Cyp. distachyos All., Fl. Ped. Auctuar. 48, t. 2, f. 5 (1879).

Cyp. laevigatus Linn. var. *distachyos* (All.) Coss. & Durieu, Fl. Algér. II : 51 (1854/56).—Kükenth., Cyper. 324 (1936).

Juncellus laevigatus (Linn.) C. B. Clarke var. *junciformis* (Cav.) C. B. Clarke in F. B. I. VI : 597.

Acorellus distachyus (All.) Palla ex Kneuck. in Allg. Bot. Zeitschr. IX : 68 (1903).—B. Schischkin in Fl. URSS III : 23 (1935).

Distr. Afghanistan (Boissier), S. Europe, Central Asia, N. Africa, India, Australia, Trop. America.

Cyperus (Juncellus) **laevigatus** Linn., Mant. II : 179 (1771).—Rottb., Descr. & Icon. 19, t. 16 (1773).—Aitch., J. L. S. XVII : 104.—Boiss., F. O. V : 366.—Kükenth., Cyper. 321, f. 5, E–H (1936).

Juncellus laevigatus C. B. Clarke in F. B. I. VI : 596.

Distr. Afghanistan (Aitchison, Boissier), S. Europe, Africa, India, China, Pacific N.

America, Australia.

Cyperus (*Cyperus*) **longus** Linn., Sp. Pl. 45 (1753).—Reichb., Icon. VIII: t. 282, f. 272 (1846).—Boiss., F. O. V: 375.—C. B. Clarke in F. B. I. VI: 614.—B. Schischkin in Fl. URSS III: 19 (1935).—Kükenth., Cyper. 97–100, t. 12, a–f (1935).

Kandahar, Arghandab (S. Kitamura 23).

Distr. Afghanistan (Boissier).—Central Asia, Pakistan, Africa.

var. **pallidior** Kükenth., Cyper.—Cypereae 100 (1935).

Cyp. longus Linn. var. *pallida* Boiss., F. O. V: 375, ex pte. non Böckl.

Distr. Afghanistan (Boissier), S. Europe, Central Asia, Pakistan.

Cyperus (*Cyperus*) **niveus** Retzius, Observ. V: 12 (1791).—Aitch., J. L. S. XIX: 189.—C. B. Clarke in F. B. I. VI: 601.—Kükenth., Cyper. 288 (1936).

Distr. Afghanistan (Aitchison, Kükenth.), India, China.

Cyperus (*Cyperus*) **rotundus** Linn., Sp. Pl. 45 (1753).—Boiss., F. O. V: 376.—C. B. Clarke in F. B. I. VI: 614.—Kükenth., Cyper. 107 (1935).—T. Koyama in Acta Phytotax. et Geobot. XVII: 47 (1957).

Kandahar (S. Kitamura 56), Mazarisharif (S. Kitamura 47, 48).

Distr. Afghanistan.—Cosmopolitan.

Cyperus (*Pycneus*) **sanguinolentus** Vahl, Enum. Pl. II: 351 (1806).—Kükenth., Cyper. 385 (1936).

Cyp. Lehmanni Boiss., F. O. V: 364.

Pycneus sanguinolentus (Vahl) Nees in Linnaea IX: 283 (1835).—C. B. Clarke in F. B. I. VI: 590.

Distr. Afghanistan (Boissier, Kükenth.), Africa, India, Malaysia, China, Japan.

Eleocharis atropurpurea (Retz.) Kunth, Enum. Pl. II: 151 (1837).—Aitch., J. L. S. XIX: 189.—Boiss., F. O. V: 761.—Svens. in Rhodora XXXI: 227 (1929).—G. Zinserl. in Fl. URSS III: 72 (1935).

Distr. Afghanistan (Aitchison).—Almost pantropic.

Eleocharis caribaea (Rottb.) Blake in Rhodora XX: 24 (1918).—Svens., l. c. 31: 225 (1929).

E. capitata R. Br., Prodr. 225 (1810).—Boiss., F. O. V: 387.—C. B. Clarke in F. B. I. VI: 627.

Distr. Afghanistan (Boissier).—Almost pantropic.

Eleocharis Kitamurana T. Koyama in Acta Phytotax. et Geobot. XVII: 48, f. 1 (1957). **Fig. 44.**

Caespitans stolonifera. Culmi erecti teretes 40–50 cm alti 1.5–2 mm crassi glaucovirides multicostulatus in sicco. Vaginae basiales 2–3, infima squamiformes rubropurpurea, summa cylindrica culmum arcte circumdans 7–8 cm longa a basi supra medium rubropurpurea sursum pallida ore vertice secta margine integra paene cartilaginea et fuscata. Spicula terminalis teres vel oblonga (4–) 6–9 mm longa 2–2.3 mm in diametro pallide fuscens spisse pluriflora. Squamae inferiores 2 steriles culmum

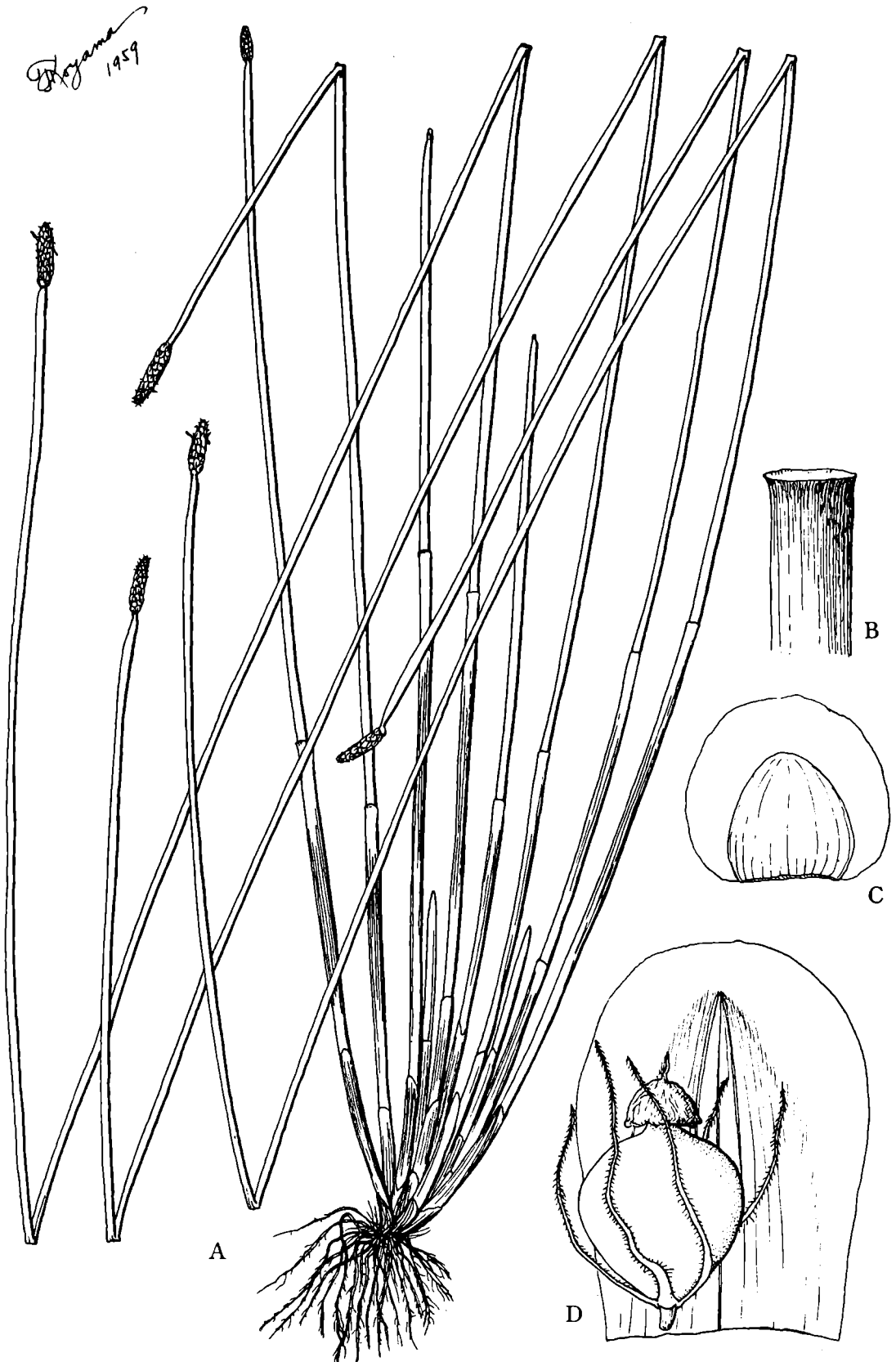


Fig. 44. *Eleocharis Kitamuraana* T. Koyama (A. $\times 1$; B. $\times 5$; C. $\times 25$; D. $\times 25$) A. Total plant; B. Apex of basal sheath; C. Scaly bract; D. Achene and its scale.

1/2-amplectentes rotundato-ovales dorso late cinereovirides margine late scariosae; fertiles late ellipticae vel obovatoellipticae 2.8 mm longae 1.8 mm latae tenuimembranaceae pallidae vel pallide fuscescentes apice acutiusculae usque obtusiusculae dorso sublata cinereovirentes inconspicue uninerviae. Stamina 3, antheris lineari-oblongis 1.3 mm longis, connectivo circiter 0.2 mm longo triangulatosubulato. Nuces obovato-orbicularis 1.4 mm longae 1.2 mm latae subinaequaliter biconvexae apice subito contractae basi etiam abrupte cuneatocontractae facie rubescentifuscae nitidulae, stylopodio depresso trapezoideo-ovale spongioso e basi transversa ad apicem rotundam rotundo-contracto; setis hypogynis plerumque 5 retrorsim spinulosocabris fuscis stylopodio longioribus.

Sarobi (S. Kitamura 61).

Distr. Afghanistan (endemic).

Eleocharis palustris (Linn.) R. Br., Prodr. 224 (1810).—Aitch., J. L. S. XVIII: 104.—Boiss., F. O. V: 389.

Distr. Afghanistan (Aitchison, Boissier), Europe, N. America.

I am not sure if the Afghan plants cited by Aitchison and Boissier were correctly determined without seeing many specimens from there. When we split *E. uniglumis* and *E. palustris* sensu lat. into many local populations, we must also refer to Zinserling's species (in Fl. URSS III: 72-90).

Eleocharis uniglumis (Link) Schultes, Mant. II: 88 (1824).

var. **transcaucasica** (G. Zinserling) T. Koyama in Acta Phytotax. et Geobot. XVII: 48 (1957).

E. transcaucasica G. Zinserl. in Fl. URSS III: 81 & 585 (1935).

Between Sarobi and Kabul (S. Kitamura 54), between Bulola and Doab (S. Kitamura 58), Nuristan: Between Pushuki and Kushitaki (S. Kitamura 30), West of Kebul (S. Kitamura 28).

Distr. Afghanistan, Caucasus, Turkestan.

var. **latior** T. Koyama in Acta Phytotax. et Geobot. XVII: 49 f. 2 (1957).

Kabul (S. Kitamura 21).

Distr. Afghanistan.

Fimbristylis dichotoma Vahl, Enum. Pl. II: 287 (1806) pro pte. excl. var.—Aitch., J. L. S. XIX: 189.—Boiss., F. O. V: 389.—B. K. Schischkin in Fl. URSS III: 92, t. 8, f. 5a-c.

F. laxa Vahl, l. c. 262 (1806).—Boiss., F. O. V: 389.

Distr. Afghanistan (Aitchison, Boissier). Almost all warm regions of the old world.

Very polymorphous species: annual and perennial habits, in addition to size and form of spikelets and achenes make it possible to divide this species into about eight varieties and forms (cfr. T. Koyama in Contrib. Inst. Bot. Univ. Montréal LXX: 40-41. 1957).

Schoenus nigricans Linn., Sp. Pl. 64 (1753).—Aitch., J. L. S. XVIII: 104.—Boiss., F. O. VI: 593.—C. B. Clarke in F. B. I. VI: 673.—Roshevitz in Fl. URSS

III: 101, t. 5, f. 11.

Distr. Afghanistan (Boissier), Eurasia (except s-e. Asia).

Scirpus (Lachnophorum) **comosus** Wallich ex Roxb., Fl. Ind. I: 324 (1820).

Eriophorum comosum Wallich ex Nees in Wight, Contrib. Bot. Ind. 111 (1834).—Aitch., J. L. S. XIX: 189.—C. B. Clarke in F. B. I. VI: 664.—T. Koyama in Acta Phytotax. et Geobot. XVII: 49 (1957).

Nuristan: Between Seprigal and Voma (S. Kitamura 32).

Distr. Afghanistan, Himalaya.

As I mentioned (in Journ. Fac. Sci. Univ. Tokyo 3, VII: 272–5, 294–5) the genus *Eriophorum* can not be separable generically from *Scirpus*, if other groups of *Scirpus*, viz. *Bolboschoenus*, *Scheonoplectus*, or *Baeothryon*, are treated to be included in *Scirpus* s. lat.

Scirpus (*Holoschoenus*) **Holoschoenus** Linn., Sp. Pl. 49 (1753).—Boiss., F. O. V: 382.—T. Koyama in Acta Phytotax. et Geobot. XVII: 49 (1957).

Holoschoenus vulgaris Link, Hort. Berol. Descr. I: 293 (1827).—Roshev. in Fl. URSS III: 41, t. 3, f. 6 (1935).

Doab. (S. Kitamura 57).

Distr. Afghanistan.—Europe.

Scirpus (*Actaeogeton*) **juncoides** Roxb., Fl. Ind. I: 288 (1820).—Aitch., J. L. S. XIX: 189.—Boiss., F. O. V: 383.—T. Koyama in Journ. Fac. Sci. Univ. Tokyo 3, VII: 310 & 314 (1958).

S. erectus sensu auct. plur., non Poir.

Distr. Afghanistan (Aitchison, Boissier), India, China, Indo-China, Malaysia, Australia, Japan, Pacific Isls.

Scirpus lacustris Linn., Sp. Pl. 48 (1753).

subsp. **glaucus** (Smith) Hartman, Svensk. og Norsk. Exc. Fl. 10 (1846).—T. Koyama in Journ. Fac. Sci. Univ. Tokyo 3, VII: 321 (1958).

S. Tabernaemontani Gmel., Fl. Bad. I: 101 (1805).—Roshev. in Fl. URSS III: 47, t. 4, f. 3.

S. lacustris Linn. var. *digynus* Gren. et Godr., Fl. France III: 372 (1855).—Boiss., F. O. V: 383.

Between Ghazni and Kabul (S. Kitamura 25), Jalalabad (S. Kitamura 59).

Distr. Afghanistan, Eurasia, Malaysia, Pacific Isls., N. America.

In the long run, I come to a conclusion that *S. lacustris* and *S. Tabernaemontani* are not specifically distinct from one another (Koyama, l. c. 1958).

Scirpus (*Littorales*) **littoralis** Schrad., Fl. Germ. I: 142 (1806).—Boiss., F. O. V: 383.—Roshev. in Fl. URSS III: 52, t. 4, f. 8.—T. Koyama in Journ. Fac. Sci. Univ. Tokyo 3, VII: 325 (1958).

S. subulatus: Aitch., J. L. S. XIX: 189.

Distr. Afghanistan (Boissier), Europe to Central Asia.

The distinction between *S. littoralis* and *S. subulatus* is made by the angularity of culm which is terete in *S. subulatus*. Boissier's description shows *S. littoralis* itself, as his description reads as culmi triquetri.....In my observation, *S. subulatus* chiefly occurs in the Pacific Isls. and Aitchson's data is a misidentification.

Scirpus (Bolboschoenus) **maritimus** Linn., Sp. Pl. 51 (1753).

var. **macer** Böckeler ex Aitch., J. L. S. XIX: 189 (1882) sine descr., ut *macra*.

S. maritimus: Boissier, F. O. V: 384.—T. Koyama in Acta Phytotax. et Geobot. XVII: 49 (1957), vix Linn.

Differt a typo habitu magis majore, nucibus obovato-orbicularibus latioribus, stylo basi non incrassato.

Doab (S. Kitamura 33), 15 km east of Kandahar (S. Kitamura 36).

Distr. Afghanistan.

This variety differs from the typical *S. maritimus* chiefly by its very narrow style base never thickened at the base and by the more robust habit. The European *S. maritimus* having more or less thick style base and rather obtusely angled achenes, is allied to E. Asiatic *S. planiculmis*. Though I think the plants from Afghanistan may be specifically distinct from *S. maritimus* itself in some respects including the achene characters, not seeing many specimens from there I here apply Böckeler's epithet, without change in ranking, to this plant for the time being.

Scirpus (Blysmus) **planifolius** Grimm in Nova Acta Cur. III, App. 259 (1767).—Ohwi & T. Koyama ex Kitamura in Kihara, Fauna & Fl. Nepal Himal. 90 (1955).

S. compressus (Linn.) Pers., Synops. I: 66 (1805); Boiss., F. O. V: 385.

S. Caricis Retz., Fl. Scand. 11 (1779).—C. B. Clarke in F. B. I. VI: 660.

Blysmus compressus Panzer ex Link, Hort. Berol. I: 278 (1827).—Roshev. in Fl. URSS. III: 59, t. 5, f. 1.

Distr. Afghanistan (Boissier), Europe, Himalaya.

Scirpus (Baeothryon) **pumilus** Vahl, Enum. II: 243 (1806).—Raymond in Contrib. Inst. Bot. Univ. Montréal No. LXX: 90 (1957).

S. alpinus Schleicher ex Gaudin, Fl. Helv. I: 108 (1828).—Boiss., F. O. V: 378.

Distr. Afghanistan (Boissier), Eurasia.

This taxon has four geographical populations fairly well differentiated from each other (cfr. Raymond, 1. c.). The Afghan plants are in need of being reexamined.

Scirpus (Isolepis) **setaceus** Linn., Sp. Pl. 49 (1753).—Aitch., J. L. S. XIX: 189.—Boiss., F. O. V: 380.—C. B. Clarke in F. B. I. VI: 654.—Roshev. in Komar. Fl. URSS III: 46, t. 4, f. 1.

Distr. Afghanistan (Aitchison, Boissier), Africa, Europe, Central Asia, India, China, Australia.

Scirpus (Lacustres) **triqueter** Linn., Mant. 29 (1767).—C. B. Clarke in F. B. I. VI: 658.—Roshev. in Fl. URSS III: 48, t. 4, f. 5.—T. Koyama in Acta Phytotax. et Geobot. XVII: 49 (1957).

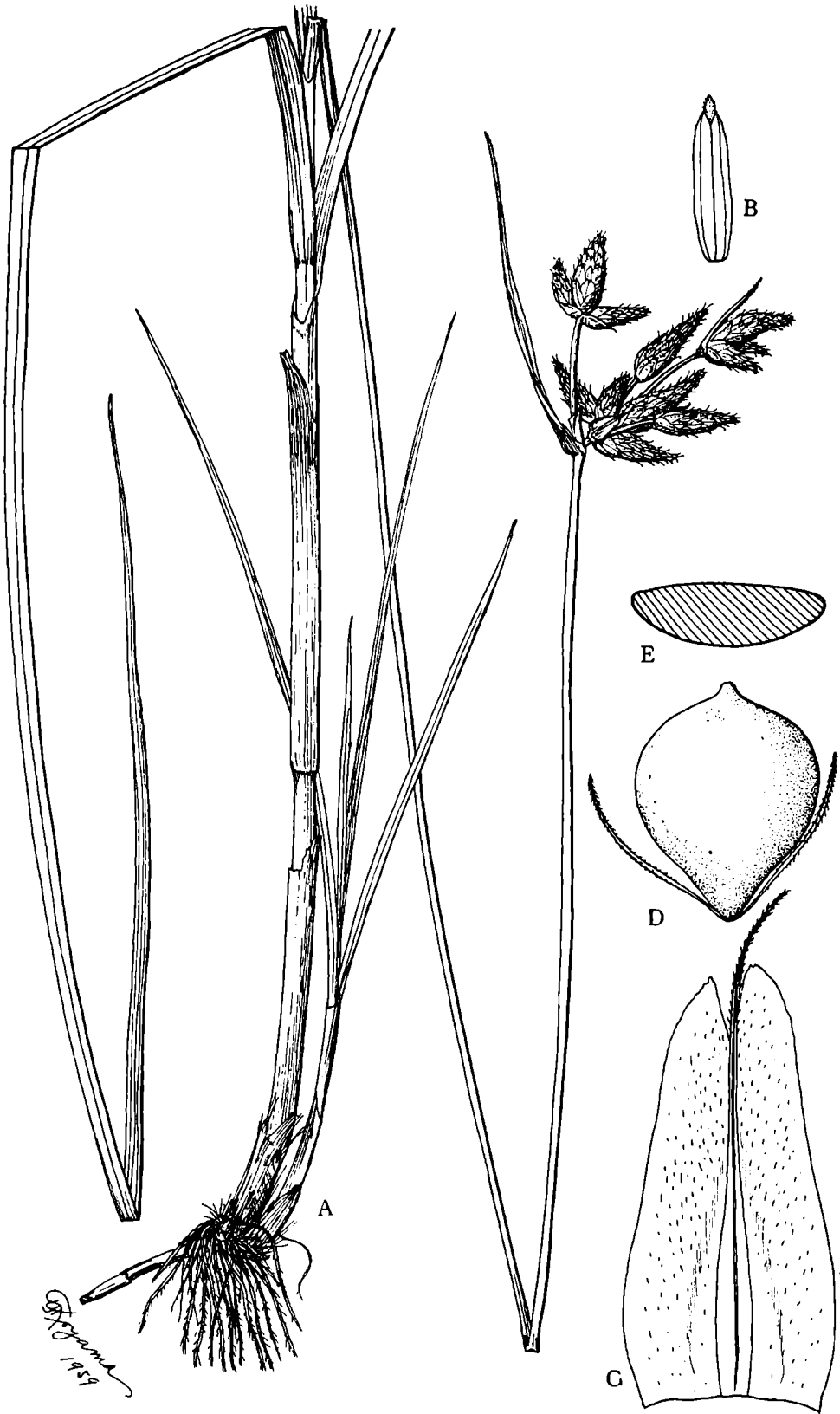


Fig. 45. *Scirpus vulpinicolor* T. Koyama A. Total plant; B. Anther; C. Floral scale; D. Achene; E. Transverse section of ditto. (A×1, B.×10, C.×10, D, E×20)

Kunduz (S. Kitamura 29).

Distr. Afghanistan, Eurasia, Africa.

Scirpus (Bolboschoenus) **strobilinus** Roxb., Fl. Ind. I': 220 (1820).—T. Koyama in Acta Phytotax. et Geobot. XVII: 50 (1950).

S. maritimus Linn. var. *affinis* (Roth) C. B. Clarke in F. B. I. VI: 659 (1783). West of Kabul (Kitamura 40).

Distr. Afghanistan, India.

Scirpus (Bolboschoenus) **vulpinicolor** T. Koyama in Acta Phytotax. et Geobot. XVII: 50 (1957). **Fig. 45.**

Rhizoma crassum lignosum stolones longos usque 3 ad 6 mm crassos et radices multas validas emittens. Culmus solitarius erectus 60–80 cm altus acute triquetus laevis basi ad 5 mm sursum circiter 3 mm latus infra medium subdense multi- (plerumque 5–12)–foliatus et basi vaginis aphyllis obtectus. Folia normalia omnia caulina; laminae lineares vulgo 4–8 mm latae plus minus flaccidae quam in-florescentia paullo superantes vel cum ea fere aequantes media unicastatae marginibus laevissimae ad apicem longe acutam gradatim attenuantes subtus pallidiores basi vix angustatae; vaginae 15–22 cm longae basem culmi sublaxe circumdantes textu tenues conspicue septatonodosae, ligulis vix evolutis. Vaginae basillares 1–2 (–3) aphyllae ad 18 cm longae flavofuscae vel pallidiores et valde septatonodosae apice oblique sectae. Inflorescentia terminalis corymbosa composita 5–7 cm longa ac lata; bractae 2–3 foliaceae patentes inflorescentiam multo superantes basi evaginant; radii e prophylo ochreiformi 4–6 mm longo tenui-membranaceo apice oblique secto surgentes 3–5 inaequales patentes ad 3 cm longi subcompressi laeves apice radiatim (2–) 3–5-spiculosi. Spiculae lanceolato-oblongae 12–18 mm longae circiter 5 mm in diametro spisse pluriflorae fuscescentiflavae apice longe acutae. Squamae ovatoellipticae 6.5 mm longae 3.5–4 mm latae a basi ad apicem gradatim angustatae chartaceomembranaceae flavae extra perdense hispidulae dorso tenuiter sed conspicue uninerviae, nervo ex apice squamae acute exciso in aristam rectam 0.5 mm^l longam scabram excurrente. Stamina 3, antheris lineariblongis 3.5 mm longis, connectivo anguste ovatoacuto 0.5 mm longo puberulente. Nuclei late obovato-orbiculares 2.4–2.5 mm longae 1.8–2.0 mm latae inaequaliter biconvexae facie ventrale fere plana basi subabrupte cuneatocontractae sessiles apice rotundae cum mucrone depresso circiter 0.2 mm longo, setis hypogynis 2, 1, vel 0 cum $\frac{1}{2}$ usque $\frac{2}{3}$ nucleis aequantibus spinulis multis densis retrorsim scabris. A *Scirpo maritimo* Linn. nucleis lenticularibus, antheris longioribus, squamis flavis et culmo basi dense foliato sat distinctus.

West of Kabul (S. Kitamura 40).

Distr. Afghanistan (endemic).

Palmae

Nannorhops Richieana H. Wendl. in Bot. Zeit. 1879: 148.—Aitch., J. L. S. XIX: 140, 131, Tab. 26. (Excl. Fig. 9–12).—Hooker f., F. B. I. VI: 429.

Distr. Pakistan (Kuram etc.).

Phoenix dactylifera L., Sp. Pl. 1188 (1753).—Aitch., T. L. S. n. III : 120. **Fig. 6.** Jalalabad (June 17, 1955 S. K.).

Distr. A native of Eastern Mediterranean Region. Cultivated in Afghanistan.

The native name for the palm Mach, for the fruit Khurma. According to Aitch., this palm is wild in Southern Pakistan.

Araceae

Arisaema flavum (Forsk.) Schott, Prodr. 40 (1860).—Hooker f., F. B. I. VI : 503 (1893), Bot Mag. t. 7700.—Engler, Pflanzenreich Heft 70 : 172, Fig. 34 (1920).

Arisaema abbreviatum Schott in Öster. Bot. Zeitsch. VII : 382 (1857).—Aitch., J. L. S. XVIII : 99.

Distr. North Africa, Afghanistan, W. Himalaya to Garwal.

Arisaema Jacquemontii Blume in Rumphia I : 95 (1835).—Decne. in Jacquemont, Voy. Bot. t. 168.—Aitch., J. L. S. XIX : 188.—Engler in Pflanzenreich Heft 76 : 197, Fig. 45 (1920).

Distr. Afghanistan (Kuram), Himalaya : from Kashmir to Sikkim.

Arum Jacquemontii Blume in Rumphia I : 118 (1835).—Hooker f., F. B. I. VI : 509.—Engler in Pflanzenreich Heft 70 : 81, Fig. 12—J. H. (1920).

Arum Griffithii Schott, Syn. 15 (1856).—Aitch., J. L. S. XVIII : 99, T. L. S. n. III : 120.

Pagman near Kabul (July 15, 1955 S. K.)—with fruits, Nuristan : Chatrass (Aug. 2, 1955 S. K.)—with fruits.

Distr. Afghanistan, W. Himalaya.

Eminium Lehmannii (Bunge) O. Kuntze, Rev. Gen. 741 (1891).—Engler in Pflanzenreich Heft 70 : 128.—Kuseneva in Fl. URSS III : 488, Tab. XXVI-4 (1935).

Hericophyllum crassifolium (Ledeb.) Engler in DC., Mon. Phan. II : 597 (1879).—Aitch., J. L. S. n. III : 120. Gartenfl. 1881 t. 1056.

Distr. Central Asia (common), Afghanistan.

Lemnaceae

Lemna gibba L., Sp. Pl. 970 (1753).—Boiss., F. O. V. : 30. Reich., Ic. VII t. 14.

Distr. Cosmopolitan.

Juncaceae

Juncus articulatus L., Sp. Pl. 327 (1753).—Briquet, Prodr. Fl. Corse I : 264.

Juncus lamprocarpus Ehrh., Calam. n. 126 (ca. 1791) ex Davies in Trans. Linn. Soc. X : 13 (1810).—Boiss., F. O. V : 358.—Aitch., J. L. S. XIX : 189, T. L. S. n. III : 120.—Buchanau, in Pflanzenreich Heft 25 : 217.—Krecz. et Gontsch., l. c. 538.

Nuristan : Between Voma and Chatrass (Aug. 1, 1955 S. K.), between Chatrass and Kushimaicot (Aug. 2, 1955 S. K.), Kandahar, Arghandab (June 7, 1955 S. K.), Taiwara (Sept. 8, 1955 T. Umesao), Pulikhumri (July 3, 1955 S. K.).

Distr. Europe, North Africa, Siberia, Central Asia, Mongolia, Asia Minor, Iran, Afghanistan, Pakistan, Himalaya : from Kashmir to Kunawar.

Juncus bufonius L., Sp. Pl. 328 (1753).—Boiss., F. O. V : 361.—Buchenau in Pflanzenreich Heft 25 : 105 (1906).—Krecz. et N. Gontsch. in Fl. URSS III : 517.

Distr. Cosmopolitan.

Juncus Gerardi Lois. in Jour. de Bot. 284 (1809).—Buchenau, l. c. 112.—Kreczet. et N. Gontsch. in Fl. URSS III : 528. Reich., lc. IX-X, Tab. 398, Fig. 888–889.

Juncus compressus Aitch. (non L.), J. L. S. XVIII : 104.—Hooker f., F. B. I VI : 393.

Nuristan : Between Chatrass and Kushimaicot (Aug. 2, 1955 S. K.).

Distr. Europe, North Africa, Caucasus, W. Siberia, Central Asia, Asia Minor, Iran, Afghanistan, Kashmir.

Aitchison reported (T. L. S. n. III : 120), *J. Gerardi* var. *condensatus* (*J. soranthus* Schrenk) from W. Afghanistan.

Juncus inflexus L., Sp. Pl. 326 (1753).

var. **brachytepalus** (Trautv.) Kitamura comb. nov.

Juncus brachytepalus V. Krecz. et Gontsch., l. c. 547, 630, Tab. XXIX–14 (1935).

Juncus glaucus var. *brachytepalus* Trautv. ex Krecz. et Gontsch., l. c. pro syn.

Juncus glaucus Boiss. (non Ebrh.), F. O. V. 353 pro parte.

Juncus glaucus Ebrh. var. *longicornis* Buchenau (non Grognot), l. c. 134 pro parte.

Taiwara (Sept. 8, 1955 T. Umesao), Nuristan : Between Chatrass and Kushimaicot (Aug. 2, 1955 S. K.).

Distr. var. Central Asia, Afghanistan.

The Afghan specimens have not so thick stems. The base of the stem is purple brown. The fruits are usually slightly longer than the tepals. This is not so distinctly different from var. *inflexus*.

Juncus jaxarticus V. Krecz. et Gontsch. in Fl. URSS III : 532, 628, Tab. XXVIII–7 (1935).

Kabul (July 22, 1955 S. K.).

Distr. Central Asia, Afghanistan.

The specimens are smaller. Stems 11–19cm tall. Flowers 3.5–4 mm long.

Juncus maritimus Lam., Encycl. Méth. Bot. III : 264 (1789).—Aitch., T. L. S. n. III : 119.—Krecz. et Gontsch., l. b. 545.

Distr. Europe, North Africa, Caucasus, Kara-Kum, Asia Minor, Iran, Afghanistan, Pakistan.

Juncus membranaceus Royle ex Don in Trans. Linn. Soc XVIII 3 : 317 (1840).—Hooker f., F. B. I. V : 398.—Buchenau, l. c. 229 (1906).—Wendelbo in Nytt Mag. Bot. I : 23 (1952).

J. Hoffmeisteri Klotzsch, Reise Prinz. Waldemar 60, t. 98 (1862).

Nuristan : Shabul Gul (Aug. 6, 1955 S. K.).

Distr. Afghanistan (E), Pakistan, Himalaya : from Kashmir to Sikkim.

Sepals white 4.5 mm. long. Seeds immatured with long tails.

Juncus pyramidatus Lah. was reported by Boissier (F. O. V : 359) from Afghanistan.

Liliaceae

Allium altissimum Regel in Acta Horti Petrop. VIII : 666 (1884).—Wendelbo in Symbolae Afghanicae IV : 169 (1959).

Distr. Central Asia, Afghanistan.

Allium angustipetalum Wendelbo, l. c. 169, Fig. 59a-c, 70 h (1959).

Distr. Afghanistan.

Allium anisotepalum Vved. in Bull. Univ. As. Centr. XIX : 123 (1934), in Fl. URSS IV : 215, Tab. XIII Fig. 2a-c (1935).—Wendelbo, l. c. 169.

Distr. Pam.-Al., Tianshan, Afghanistan.

Allium atrovioleaceum Boiss., Diag. Pl. Or. Ser. I, VII : 122 (1846), F. O. V : 240.—Bornm. in Engler, Bot. Jahrb. LXVI : 245.—Vved. in Fl. URSS IV : 252 (1935).—Wendelbo, l. c. 171.

Distr. Krim, Caucasus, Central Asia, Iran, Afghanistan.

Allium blandum Wall., Pl. As. rar. III : 38, t. 260 (1832).—Hooker f., F. B. I. VI : 339.—Wendelbo, l. c. 171, Fig. 60a-f. (1959).

Allium Aitchisonii Boiss., F. O. V : 218.

Distr. Central Asia : Dz.-Tarb., Pam.-Al., Tianshan, Dzung.-Kashgaria. Afghanistan, Himalaya : from Kashmir to Nepal.

Allium Borszczowii Regel in Acta Horti Petrop. III : 74 (1875), Fl. Turk. t. VI. f. 11-14 (1876).—Vved., l. c. 233 (1935).—Wendelbo, l. c. 172, Fig. 61a-c (1959).

Distr. Central Asia, Iran, Afghanistan.

Allium Brahuicum Boiss., F. O. V : 278 (1884).—Aitch., T. L. S. n. III : 117.

Distr. Afghanistan, Pakistan.

Allium cabulicum Baker in Bot. Mag. t. 7294 (1893).—Wendelbo, l. c. 173 (1959).

Distr. Afghanistan.

Allium capitellatum Boiss., Diag. Ser. I, VII : 118 (1846), F. O. V : 254.—Aitch., J. L. S. XVIII : 101.

Distr. Iran, Afghanistan (Kuram).

Allium caspicum (Pallas) M. B., Fl. Taur.-Cauc. I : 265 (1808).—Vved., l. c. 275 (1935).—Wendelbo, l. c. 173 (1959).

Distr. Niz.-Borg., Caucasus, Central Asia, Afghanistan.

Allium Cepa L., Sp. Pl. 300 (1753).

Kunduz (July 7, 1955 S. K.)—cultivated. Native name Peyaz.

Distr. The native country is unknown. Largely cultivated in Afghanistan. The

outer scales of the bulbs are red-purple.

In Japan the outer scales of onions are yellow or white. They were introduced from North America and Europe.

Allium chitralicum Wang et Tang in Bull. Fan Mem. Inst. Biol. VII: 298 (1937).—Wendelbo, l. c. 173, Fig. 70k (1959).

Distr. Afghanistan, Pakistan.

Allium cucullatum Wendelbo, l. c. 173, Fig. 62a-c, 70c (1959).

Distr. Afghanistan.

Allium fibriferum Wendelbo, l. c. 175, Fig. 59 d-f, 70g (1959).

Distr. Afghanistan.

Allium fibrosum Regel in Acta Horti Petrop. X: 322, t. VII-2 (1887).—Vvedensky in Fl. URSS IV: 209.—Wendelbo, l. c. 175.

Allium leucosphaerum Aitch. et Baker, T. L. S. n. III: 117 (1888).

Distr. Kara-Kum., Gorn.-Turkm., Afghanistan (W).

Allium giganteum Regel in Gartenfl. XCVII, t. 1113 (1883).—Wendelbo, l. c. 175, Fig. 70 i, j.

Allium Macleani Baker in Bot. Mag. t. 6707 (1883).—Aitch., T. L. S. n. III: 117.

Kabul: Sheer-Darwaza (Mar. 28, 1952 O. Suzuka).

Distr. Afghanistan, Gorn.-Turkm., Pam.-Al., Iran.

The specimen cited above has broader leaves (28 cm long 6.8 cm broad) and the scape with flower buds. Probably this may be referred to? *Allium haemanthoides* sensu Bornm. in Engler, Bot. Jahrb. LXVI: 246. This specimen can not be *A. haemanthoides*, because the tepals are obtuse.

Allium Gilli Wendelbo, l. c. 176, Fig. 63a-d, 67 b, c. (1959).

Allium scabrum Gilli in Fedde, Rep. LVI: 146, Abb. 1 (1954), non Gilib (1792).

Distr. Afghanistan.

Allium Griffithianum Boiss., Diagn. Ser. II, IV: 117 (1856).—Regel, Mongr. 108 (1875).—Aitch., J. L. S. XVIII: 101.—Wendelbo, l. c. 178, Fig. 64b. (1959).

Allium Griffithianum var. *oligactis* Bornm. in Engler, Bot. Jahr. LXVI: 245 (1934).

Allium rubellum β . *grandiflorum* Boiss., F. O. V.: 253 p. p.—Aitch., T. L. S. n. III: 117.—Hooker f., F. B. I. VI: 339 p. p.

Shibar Pass 3300 m (June 24, 1955 S. K.), Sarobi (June 18, 1955 S. K.), Darulfoon, Kabul (April 15, 1952 O. Suzuka).

Distr. Afghanistan, Syr-Dar., Pam.-Al.

This is a beautiful species. The flowers red-purple, 8 mm long. The length of the pedicels is variable 4-9 mm long. The number of flowers is also variable. The stamens are usually broad and very short. The outer scales of the bulb are usually fibrous.

Allium micranthum Wendelbo, l. c. 178, Fig. 65a-f. (1959).

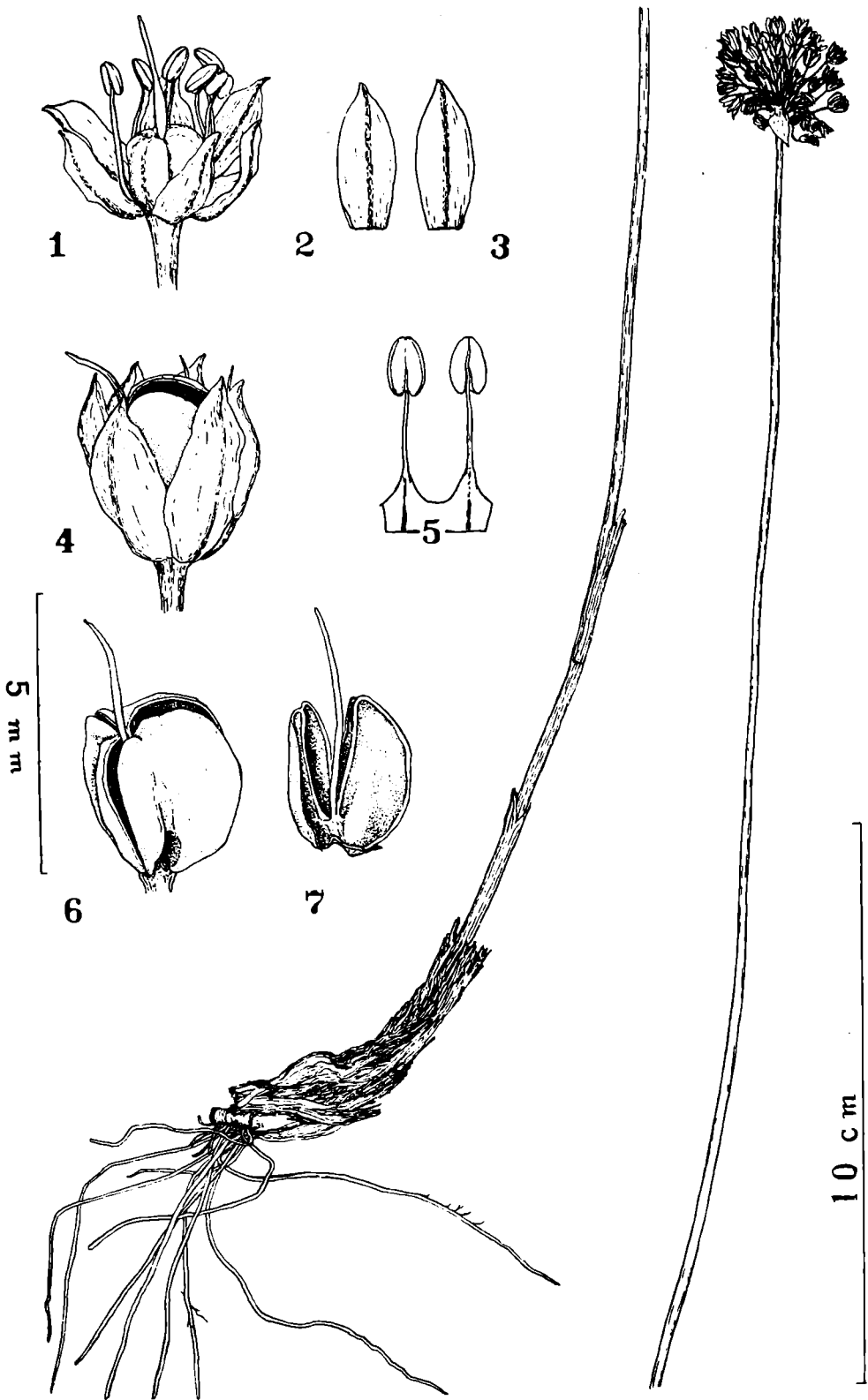


Fig. 46. *Allium nuristanicum* Kitam. : 1 Flower, 2 and 3 Tepals, 4 and 6 Capsule, 5 Stamens, 7 Vertical section of Capsule. (Nuristan: Between Kushimaicot and Pushuki).

Distr. Pakistan (Kuram).

Allium mirum Wendelbo, l. c. 178, Fig. 66a-c (1959).

Distr. Afghanistan.

Allium (§ *Rhiziridium*) **nuristanicum** Kitamura in Acta Phytotax. Geobot. XVII: 142 (1958). Fig. 46.

Ab Allio Jaquemontii corollis brevioribus, pedicellis longioribus differt.

Rhizoma breve obliquum valide fibrosum. Bulbus elongato-cylindricus basi leviter inflatus 2.5–4.5 cm longus basi 6–10 mm latus, tunicis exterioribus dense fibroso-reticulatis fuscescentibus. Caulis 20–40 cm altus inferne teres 1–2 cm diametro superne sulcato-striatus glaber, infra medium foliatus. Folia 3, cum vaginis glabris purpurascenscentibus, 12–30 cm longa 1–1.5 mm lata subteretia, longitudinaliter striata secus strias sub lente cartilagineo-scabra, intus non fistulosa. Umbella capsulifera globosa densiflora, sub anthesi 1.5–2 cm, in fructu 2–2.5 cm diametro. Spathae 2, late ovatae apice caudato-acuminatae 6.5–10 mm longae. Pedicelli sub anthesi 6–7 mm longi, post anthesin 9–15 mm longi graciles angulati. Corolla albo-rosascens 3.5 mm longa, sepala oblonga apice obtusa mucronulata, dorso costis intense roseopurpurascenscentibus praedita. Filamenta breviter exserta e basi deltoidea integra vel obscule utrinque unidentata, superne subulata. Stylus 2.5 mm longus. Capsula glabra 3 mm longa 3–3.5 mm lata, loculis biovulatis. Semina nigra 2.8 mm longa.

Nuristan: Between Kushimaicot and Pushuki (Aug. 3, 1955 S. Kitamura)—Typus in Herb. Univ. Kyoto, Between Pushuki and Kushitaki (Aug. 4, 1955 S. Kitamura).

Distr. Afghanistan.

This species is related to *Allium Jaquemontii* and may be a subspecies with smaller flowers and longer pedicels, differentiated in Nuristan.

Allium oreophilum C. A. Mey. in Verz. Cauc. 37 (1831).—Vved., l. c. 255 (1935).—Wendelbo, l. c. 181, Fig. 70b (1959).

Distr. Caucasus, Central Asia, Afghanistan.

Allium porrum L., Sp. Pl. 294 (1753).

Kabul (July 15, 1955 S. K.)—cultivated, native name Gandanah.

Distr. Cultivated plant of the Mediterranean Region.

Allium pseudoxiphopetalum Wendelbo, l. c. 181, Fig. 67a, 71c.

Distr. Afghanistan, Pakistan.

Allium Regelii Trautv. in Acta Horti Petrop. IX: 275 (1884).—Vved., l. c. 278 (1935).—Wendelbo, l. c. 182, Fig. 70a (1959).

Allium Yatei Aitch. et Baker, J. L. S. n. III: 117.

Distr. Iran, Gorn.—Turkm., Kara-Kum., Afghanistan.

Allium robustum Kar. et Kir. in Bull. Soc. Nat. Mosc. XIV: 853 (1851).—Aitch., J. L. S. XVIII: 101.—Vvedensky in Fl. URSS IV: 265.

Allium atropurpureum sensu Boiss., F. O. V: 757 pro parte.

Distr. Central Asia, Afghanistan (Kuram).

Allium Rosenbachianum Regel in Acta Horti Petrop. VIII: 664, t. XXI, f. c-i (1884).—Vved., l. c. 270 (1935).—Wendelbo, l. c. 182, Fig. 70b. (1959).

Distr. Pam.-Al., Afghanistan.

Allium Roylei Stearn in Herbertia XII: 75 (1947).—Wendelbo, l. c. 182, Fig. 68 (1959).

Distr. Afghanistan (Nuristan), Himalaya: from Kashmir to Garwal.

Allium rubellum M. B., Fl. Taur. Cauc. I: 264 (1808).—Hooker f., F. B. I. VI: 339.—Vved., l. c. 213 (1935).—Wendelbo, l. c. 182 (1959).

Distr. Caucasus, Afghanistan, Himalaya: from Kashmir to Kumaon.

Allium sativum L., Sp. Pl. 296 (1753).

Native name Sir.

Distr. The native country is unknown. Cultivated and sold in Afghanistan. The writer purchased the bulbs in Kabul and in Mazarisharif.

Allium Semenovii Regel in Bull. Soc. Nat. Mosc. XLI, 1: 449 (1868), Fl. Turk. t. VIII, 4-5 (1876).—Vved., l. c. 189 (1935).—Wendelbo, l. c. 183, Fig. 69.

Distr. Dzung.-Tarb., Tianshan, Dz.-Kashg., Afghanistan (E).

Allium stipitatum Regel in Gartenfl. 335, t. 1062, f. 1-3. (1881).—Vved., l. c. 267 (1935).—Wendelbo, l. c. 183, Fig. 70e (1959).

Distr. Pam.-Al., Afghanistan.

Allium Stocksianum Boiss., Diag. Ser. II, IV: 117 (1859), F. O. V.: 226.—Wendelbo, l. c. 183, Fig. 64c.

Distr. Afghanistan, Pakistan.

Allium tenuicaule Regel in Acta Horti Petrop. X: 348, t. IV, f. 4 (1887).—Vved., l. c. 162 (1935).—Wendelbo, l. c. 183 (1959).

Distr. Pam.-Al., Afghanistan.

Allium umbilicatum Boiss., Diag. Ser. II, IV: 113 (1859).—Aitch., J. L. S. XVIII: 101.—Wendelbo, l. c. 182, Fig. 64a.

Distr. Afghanistan, Pakistan.

Allium xiphopetalum Aitch. et Baker, T. L. S. n. III: 118, Pl. XLVIII (1888).—Vved. in Fl. URSS IV: 157 (1935).—Wendelbo, l. c. 183, Fig. 71a.

Distr. Gorn.-Turkm., Pam.-Al., Afghanistan (W).

Asparagus adscendens Roxb., Hortus Bengal. 24 (1814), Fl. Ind. II: 153 (1832).—Boiss., F. O. V: 340.—Hooker f., F. B. I. VI: 317.—Kirtikar and Basu, Indian Med. Pl. pl. 969.

Distr. Afghanistan, Pakistan, Himalaya: from Murree to Kumaon.

Asparagus brachyphyllus Turcz. in Bull. Soc. Nat. Mosc. XIII: 78 (1840).—Aitch., J. L. S. XVIII: 103.—Iljin in Fl. URSS IV: 437, Tab. XXV-2 (1935).

Distr. Southern Russia, Siberia, Central Asia, Afghanistan (Kuram), North China.

Asparagus Breslerianus Schult., Syst. VII: 323 (1830).—Aitch., T. L. S. n. III: 116.—Iljin in Fl. URSS IV: 431, Tab. XXV-4 (1935).

Distr. Nizn.-Bolg., Caucasus, Central Asia, Arm.-Kurd., Afghanistan (W).

Asparagus capitatus Baker in Journ. Linn. Soc. XIV : 607 (1875).—Hooker f., F. B. I. VI : 315.—Aitch., J. L. S. XVIII : 103.—Wendelbo, l. c. 164.

Distr. India, Pakistan, Afghanistan.

Asparagus gracilis Royle, Illustr. Bot. Himal. I : 393 (1840).—Hooker f., F. B. I. VI : 315.—Wendelbo, l. c. 164.

Distr. Pakistan, Afghanistan (Nuristan).

Asparagus Griffithii Baker in Journ. Linn. Soc. XIV : 604 (1875).—Boiss., F. O. V : 326.—Wendelbo, l. c. 164.

Distr. Afghanistan, Pakistan.

Asparagus officinalis L., Sp. Pl. 313 (1753).

Kabul, Dal-ul-Aman (July 18, 1955 S. K.)—cultivated.

Distr. Europe, North Africa, Caucasus, W. Siberia.

Asparagus neglectus Kar. et Kir. in Bull. Soc. Nat. Mosc. XIV : 48 (1841).—Iljin in Fl. URSS IV : 430, Tab. XXV-11 (1935).—Wendelbo, l. c. 165.

Asparagus trichophyllus Aitch., J. L. S. XVIII : 103.—Boiss., F. O. V : 334.

Nuristan : Between Trokikorl and Chatrass (Aug. 1, 1955 S. K.).

Distr. Altai, Central Asia, Dz.-Kashg., Afghanistan (E).

Asparagus verticillatus L., Sp. Pl. 2 ed. 450 (1762).—Aitch., T. L. S. n. III : 116.—Iljin, l. c. 428.

Distr. South-east Europe, Caucasus, Asia Minor, Iran, Afghanistan (W), Gorn.—Turkm.

Bellevalia glauca Knuth, Enum. Pl. IV : 309 (1843).

Muscari glaucum Lindley in Bot. Reg. t. 1085 (1827).

Bellevalia ciliata β. *glauca* Boiss., F. O. V : 302.

Distr. Iran, Afghanistan, Pakistan.

Bellevalia Saviczii Woron. in Bull. Jard. Princ. XXVI : 614 (1927).—Wendelbo, l. c. 164.

Hyacinthus ciliata (non Cyr.) Aitch., T. L. S. n. III : 118.

Distr. Gorn.—Turkm., Afghanistan.

Colchicum luteum Baker in Gard. Chron. 1874 : 34.—Boiss., F. O. V : 166.—Hooker f., F. B. I. VI : 356.—Czern. in Fl. URSS IV : 27 (1935). Bot. Mag. t. 6153.

Distr. Pam.—Al., Tianshan, Afghanistan, Pakistan, Kashmir, Chamba.

Colchicum Regelii Stef. in Monogr. Colch. 22-23 (1926).—Czern., l. c. 27.—Wendelbo, l. c. 151. Bot. Mag. t. 8055.

Distr. Afghanistan, Central Asia.

Colchicum speciosum Stev. in Nouv. Mém. Soc. Nat. Mosc. VII : 265 (1829).—Aitch., T. L. S. n. III : 119.—Czern., l. c. 29 (1935). Bot. Mag. t. 6078.

Distr. Asia Minor, Caucasus, Iran, Afghanistan (W).

Dipcadi unicolor (Stocks) Baker in Journ. Linn. Soc. XI : 397 (1871).—Hooker

f., F. B. I. VI: 346.—Wendelbo, l. c. 164.

Distr. Pakistan, Afghanistan.

Eremurus afghanicus Gilli in Fedde, Rep. LVI: 144 (1954).—Wendelbo, l. c. 154 (1959).

Distr. Afghanistan.

Eremurus Albertii Regel in Acta Horti Petrop. VIII: 668, Tab. VI (1884).

—O. Fedtsch. in Fl. URSS IV: 48, Tab. IV-8 (1935).—Wendelbo in Symb. Afgh. IV: 154 (1959).

Distr. Afghanistan, Amu-Dar., Pam.—Al.

Eremurus anisopterus (Kar. et Kir.) Regel in Acta Horti Petrop. II: 429 (1873).

—B. Fedtsch. in Fl. URSS IV: 50, Tab. IV-10 (1935).

E. Aucherianus Boiss. var. *Korolkovi* Regel in Acta Horti Petrop. VIII: 667 (1883).—Aitch., T. L. S. n. III: 116.

Distr. Central Asia, Iran, Afghanistan, Dzung.—Kashg.

According to Aitchison, the native name is Siresh. The plant grounded into powder, is converted into a thick jelly by boiling, and employed in the manufacture of various vessels called Dabba.

Eremurus comosus O. Fedtsch. in Bull. Herb. Boiss. 2 Sér. IV, 8: 772, Tab. 7 (1904).—B. Fedtsch., l. c. 43, Tab. IV-4 (1935).—Wendelbo, l. c. 154 (1959).

Distr. Afghanistan, Pam.—Al.

Eremurus himalaicus Baker in Journ. Linn. Soc. XV: 283 (1876).—Hooker f., F. B. I. VI: 332.—Wendelbo, l. c. 155 (1959).

Distr. W. Himalaya, Afghanistan (Nuristan).

Eremurus inderiensis (M. B.) Regel in Acta Horti Petrop. II, 2: 427 (1873).—Wendelbo, l. c. 155 (1959).

Distr. Afghanistan, Central Asia, W. Siberia.

Eremurus Kaufmanni Regel in Acta Horti Petrop. II: 425, 430 (1872).—B. Fedtsch., l. c. 47, Tab. IV-7 (1935).—Wendelbo, l. c. 155 (1959).

Eremurus Griffithii Baker in Journ. Linn. Soc. XV: 283.—Boiss., F. O. V.: 326.

Eremurus unaiensis Gilli, l. c. 143 (1954).

Distr. Afghanistan.

Eremurus Korshinskii O. Fedtsch. in Bull. Herb. Boiss. 2 Sér. IV, 8: 771 (1904).—B. Fedtsch. in Fl. URSS IV: 42, Tab. IV-13 (1935).—Wendelbo, l. c. 155 (1959).

Distr. Afghanistan, Pam.—Al.

Eremurus luteus Baker in Journ. Bot. XVII: 17 (1879).—Bunge in Acta Horti Petrop. VIII, t. XIX.—Boiss., F. O. V: 327.—Aitch., T. L. S. n. III: 116.—B. Fedtsch. in Fl. URSS IV: 51.

Distr. Arm.—Kurd., Iran, Gorn.—Turkm., Afghanistan (W).

Eremurus Olgae Regel in Acta Horti Petrop. II: 425 (1873).—Aitch., T. L. S.

n. III: 117.—Krause in Pflanzenfam. 2 ed. 15b a Fig. 101.—Bornm. in Engler, Bot. Jahrb. LXVI: 245 (1934).—B. Fedtsch., 1. c. 44, Tab. IV-5.—Wendelbo, 1. c. 155 (1959).

Between Doab and Pulikhumri (June 26, 1955 S. K.), between Pulikhumri and Haibak (June 27, 1955 S. K.)

Distr. Central Asia, Iran, Afghanistan, Pakistan: Chaman Pass (May 31, 1955 S. K.)—post anth.

Eremurus persicus (Jaub. et Spach) Boiss., Diag. Ser. 1, VII: 119 (1846), F. O. V: 326.—Hooker f., F. B. I. VI: 333.—Wendelbo, 1. c. 156 (1959).

Distr. Syria, Iran, Afghanistan, Pakistan.

Eremurus robustus Regel in Gartenfl. XXII: 275, Tab. 769 (1873).—B. Fedtsch., 1. c. 47, Tab. IV-6 (1935).—Wendelbo, 1. c. 156 (1959).

Eremurus Aitchisoni Baker, J. L. S. XVIII: 102, XIX, pl. 27.

Distr. Afghanistan, Tianshan, Pam.—Al.

Eremurus schiwanus O. Fedtsch. in Mém. Acad. Pétersb. XXIII, 8: 153 (1909).—Wendelbo, 1. c. 156.

Distr. Afghanistan.

Eremurus sogdianus (Regel et Herd.) Benth. et Hooker f., Gen. Pl. III: 787 (1880).—Wendelbo, 1. c. 156.

Distr. Afghanistan, Tianshan, Pam.—Al.

Eremurus spectabilis M. B., Fl. Taur.—Cauc. III: 269 (1819).—Aitch., T. L. S. n. III: 116.—B. Fedtsch., 1. c. 39, Tab. IV-1 (1935).—Wendelbo, 1. c. 157 (1959).

Distr. Krim., Caucasus, Central Asia, Asia Minor, Iran, Afghanistan (W).

Eremurus stenophyllus (Boiss. et Buhse) Baker in Journ. Linn. Soc. XV: 281 (1877).—B. Fedtsch., 1. c. 43 (1935).—Wendelbo, 1. c. 157 (1959). Fig. 8.

Eremurus stenophyllus var. *Bungei* (Baker) O. Fedtsch. ex Bornm. in Engler, Bot. Jahrb. LXVI: 245 (1934).

Eremurus aurantiacus Baker in J. L. S. XV: 285.—Aitch., J. L. S. XVIII: 102, T. L. S. n. III: 116.

Shibar Pass (June 24, 1955 S. K.), between Doab and Pulikhumri (June 26, 1955 S. K.)

Distr. Pam.—Al., Gorn-Turkm., Iran, Afghanistan.

Eremurus velutinus Boiss. et Buhse, Afz. 217 (1860), F. O. V: 324.—Aitch., T. L. S. n. III: 116.

Distr. Iran, Afghanistan (W).

Fritillaria imperialis L., Sp. Pl. 303 (1753).—Boiss., F. O. V: 189.—Hooker f., F. B. I. VI: 354.—Aitch., J. L. S. XVIII: 102.—Bornm. in Engler, Bot. Jahrb. LXVI: 245. Bot. Mag. t. 194, 1215.—Wendelbo, 1. c. 160 (1959).

Distr. Iran, Afghanistan, Kashmir.

Gagea afghanica Terracciano in Bull. Soc. Ort. Palermo II: 4 (1904).—Gross.

in Fl. URSS IV : 107 (1935).—Wendelbo, l. c. 158.

Distr. Afghahistan, Iran, Central Asia.

Gagea amblyopetala Boiss. et Heldr., Diag. Ser. I, VII : 107 (1846), F. O. V : 206.
—Aitch., T. L. S. n. III : 119.

Distr. Balk., Asia Minor, Afghanistan (W)—according to Aitchison.

Gagea Bergii Litv., Rast. ber. Aralskogo Syr-Dar. obl., sobr. L. S. Bergom : 33 (1905).—Gross. in Fl. URSS IV : 95, Tab. VIII-3 (1935).—Wendelbo in Symb. Afgh. IV : 158 (1959).

Gagea reticulata Aitch. (non Roem. et Schult.), T. L. S. n. III : 119 p. p.

Distr. Central Asia, Afghanistan.

Gagea chlorantha (M. B.) Roem. et Schult., Syst. Veget. VII : 551 (1829).
—Boiss., F. O. V : 209.—Aitch., T. L. S. n. III : 119.—Grossheim in Fl. URSS IV : 103, Tab. VIII-13 (1935).

Distr. Caucasus, Gorn.-Turkm., Arm.-Kurd., Iran, Afganistan (W).

Gagea Chomutovae Pascher in Bull. Soc. Nat. Mosc. XIX : 372 (1907).—Gross., l. c. 102, Tab. VIII-15 (1935).—Wendelbo, l. c. 158.

Sheer-Darwaza (Mar. 28, 1952 O. Suzuka).

Distr. Central Asia, Iran, Afghanistan.

Gagea conjungens (Pascher) Wendelbo, l. c. 158.

Gagea taurica var. *conjungens* Pascher in Bull. Soc. Nat. Mosc. n. s. XIX : 368 (1907).

Distr. Afghanistan, Pakistan.

Gagea dshungarica Regel in Acta Horti Petrop. VI : 513 (1879).—Gross., l. c. 75, Tab. VI-2a (1935).—Wendelbo, l. c. 195.

Distr. Central Asia, Afghanistan.

Gagea filiformis (Ledeb.) Kunth, Enum. IV : 237 (1848).—Aitch., J. L. S. XVIII : 101.—Gross. in Fl. URSS IV : 76 (1935).

Distr. W. Siberia, Central Asia, Iran, Afghanistan (Kuram) ? Aitchison.

Gagea gageoides (Zucc.) Vved., Fl. Turkm. I, 2 : 261 (1932).—Gross., l. c. 110, Tab. IX-6 (1935).—Wendelbo, l. c. 159.

Gagea persica Boiss., Diag. Ser. I, VII : 108 (1846), F. O. V : 210.—Hooker f., Fl. B. I. VI : 356.

Distr. Central Asia, Iran, Afghanistan, Pakistan.

Gagea graminifolia Vved. in Fl. Turkm. I, 2 : 268 (1932).—Gross., l. c. 94, Tab. VII-16 (1935).—Wendelbo, l. c. 159.

Distr. Central Asia, Afghanistan.

Gagea hissarica Lipsky in Acta Horti Petrop. XXIII : 241 f. 4-7 (1904).—Gross., l. c. 95, Tab. VIII-7 (1935).—Wendelbo, l. c. 159.

Distr. Pam.-Al., Tianshan, Afghanistan (N).

Gagea lowariensis Pascher in Fedde, Rep. II : 111 (1906).—Wendelbo, l. c. 159.

Distr. Afghanistan (Nuristan), Pakistan.

Gagea Olgae Regel in Acta Horti Petrop. III: 292 (1865).—Gross., l. c. 104, Tab. IX-1 (1935).—Wendelbo, l. c. 159.

Gagea setifolia Baker var. Aitch., J. L. S. XVIII: 102.

Kabul, Darulfanoon (April 15, 1952 O. Suzuka).

Gagea ova Stapf in Bot. Ergeb. der Polak'schen Exped. nach Persien I: 16 (1885).—Gross., l. c. 110, Tab. IX-2a (1935).—Wendelbo, l. c. 159.

Kabul, Darulfanoon (April 15, 1952 O. Suzuka).

Distr. Central Asia, Iran, Afghanistan.

Gagea pamirica Gross. in Fl. URSS IV: 108, 738, Tab. VI-18 (1935).—Wendelbo, l. c. 160.

Distr. Afghanistan (Nuristan), Pam.-Al., Tianshan.

Gagea pseudo-reticulata Vved. in Fl. Turkm. I, 2: 268 nomen.—Gross., l. c. 100, Tab. VIII-9 (1935).—Wendelbo, l. c. 160.

Gagea reticulata Aitch. (non Roem. et Schult.), T. L. S. n. III: 119 p. p.

Distr. Central Asia, Afghanistan.

Gagea setifolia Baker, J. L. S. XVIII: 101 (1800).—Wendelbo, l. c. 160 (1959).

G. setifolia var. *Aitchisoniana* (Terrac.) Pasher in Fedde, Rep. I: 193 (1905).

Gagea Aitchisoniana Terrac. in Bull. Soc. Ort. Palermo II: 4 (1904).

Distr. Afghanistan (Nuristan, Kuram).

Gagea stipitata Merckl. ex Bunge in Mém. Sav. Étrang. Pétersb. VII: 512 (1851).—Wendelbo, l. c. 160.

Distr. Iran, Afghanistan.

Lilium polyphyllum Don ex Royle, Ill. Him. Mount. 388 (1839).—Aitch., J. L. S. XVIII: 103.—Hooker f., F. B. I. VI: 351.

β. **uniflorum** Boiss., F. O. V: 176.

Distr. sp. Afghanistan (Kuram), Himalaya: from Kashmir to Kumaon.

Lloydia serotina (L.) Rechb., Fl. Germ. Exs. 102 (1830).—Komarov, Fl. URSS IV: 369.—Wendelbo, l. c. 163.

Distr. Eurasia.

Merendera Aitchisoni Hooker f. in Bot. Mag. t. 6012 (1873).—Boiss., F. O. V: 169.—Wendelbo in Symb. Afgh. IV: 151, Fig. 57, a-b (1959).

Merendera persica (non Boiss. et Ky.) Aitch., J. L. S. XIII: 103, T. L. n. III: 119.—Hooker f., F. B. I. VI: 357.

Distr. Afghanistan, Pakistan.

Native name, Shambalit (Aitch.).

Merendera robusta Bunge in Mém. Soc. Étr. Pétersb.: 515 (1854).—Boiss., F. O. V: 169.—Czern. in Fl. URSS IV: 18, Tab. 11-2 (1935).—Wendelbo in Symb. Afgh. IV: 151, Fig. 57, c. (1959). Gartenfl. 1881 t. 1058.

Kabul, Koh-i-Asmai (April 2, 1952 O. Suzuka).

Distr. Central Asia, Afghanistan, Pakistan.

Merendera sobolifera C. A. Mey., Ind. Sem. Horti. Petrop. I: 34 (1835).—Aitch., T. L. S. n. III: 119.—Czern. in Fl. URSS IV: 16, Tab. 11-1 (1935).

Distr. Balk., Asia Minor, Caucasus, Iran, Central Asia, Afghanistan (W.).

Muscari leucostomum Woron in Fedde, Rep. Sp. Nov. XXVII: 262 (1930).—Wendelbo, l. c. 164.

Distr. Caucasus, Central Asia. Iran, Afghanistan.

Muscari racemosum (L.) Miller, Gard. Dict. ed. 8 no. 31 (1768).—Boiss., F. O. V: 295.—Aitch., T. L. S. n. III: 118.—Lozina-Lozin. in Fl. URSS IV: 417, Tab. XXIV-2 (1935).

Distr. Europe, North Africa, Caucasus, Asia Minor, Syria, Iran, Afghanistan (W.).

Notholirion Thomsonianum (Royle) Stapf in Kew Bull. 1934: 96.

Fritillaria Thomsoniana Royle, Ill. Him. Mount. 388 t. 92, Fig. 1 (1839).

Notholirion macrophyllum sensu Boiss., F. O. V: 190 pro parte.

Distr. Afghanistan, Himalaya: from Kashmir to Kumaon.

Polygonatum multiflorum (L.) All., Fl. Pedem. I: 131 (1785).—Boiss., F. O. V: 332.—Aitch., J. L. S. VIII: 103, XIX: 189.—Knorr. in Fl. URSS IV: 466, Tab. XXVIII-4 (1935). Reich., Ic. X t. 433.

Distr. Europe, Caucasus, Asia Minor, Arm.-Kurd., Afghanistan, Himalaya: from Kashmir to Kumaon.

Polygonatum Sewerzowii Regel in Bull. Soc. Nat. Mosc. XII, 2: 436 (1868).—Knorr., l. c. 460, Tab. XXVIII-2a.—Wendelbo, l. c. 166.

Distr. Central Asia, Afghanistan.

Polygonatum verticillatum All., l. c. 131 (1785).—Aitch., J. L. S. XVIII: 103.—Knorr., l. c. 459.—Kitamura in Fauna and Fl. Nepal Himalaya 96 (1955). Reich., Ic. X t. 435.

Nuristan: Between Pronz and Eschtaway (Aug. 5, 1955 S. K.).

Distr. Europe, Asia Minor, Caucasus, Afghanistan, Himalaya: from Kashmir to Sikkim, China: Szechuan.

var. **gracile** Baker ex Aitch., l. c. 103.

Distr. Afghanistan.

In Nuristan, the rhizome is believed as a medicine for man's energy.

Rhinopetalum gibbosum (Boiss.) Los. et Vved. in Fl. URSS IV: 297.—Wendelbo, l. c. 161.

Distr. Gorn.-Turkm., Iran, Afghanistan.

Rhinopetalum Karelini Fischer in New Philos. Journ. 19 (1830).

Fritillaria Karelini Regel ex Baker in J. L. S. XIV: 268 (1875).—Boiss., F. O. V: 188.—Aitch., T. L. S. n. III: 118. Gartenfl. Tab. 796.

Distr. Central Asia, Iran, Afghanistan Pakistan.

Scilla Griffithii Hochr. in Bull. N. Y. Bot. Gard. VI: 264 (1910).—Wendelbo,

l. c. 164., Fig. 58 a-b.

Scilla Hohenackeri (non Fisch. et Mey.) Hooker f., F. B. I. VI: 349.

Distr. Afghanistan, Pakistan.

Smilax vaginata Decaisne in Jacquem., Voy. Bot. IV: 169, t. 169 (1844).
—Aitch., J. L. S. XVIII: 101.—Hooker f., F. B. I. VI: 305.

Distr. Pakistan (Kuram etc.), Himalaya: from Kashmir to Kumaon, Assam.

Trillium Govanianum Wall. ex Royle, Ill. Him. Mont. 384, t. 93 (1839).
—Hooker f., F. B. I. VI: 361—Aitch., J. L. S. XVIII: 188.—Wendelbo, l. c. 166.

Distr. Afghanistan (Nuristan), Pakistan (Kuram), Himalaya: from Kashmir to Sikkim.

Tulipa Clusiana DC. in Red. Lil. t. 37 (1803).—Wendelbo in Symb. Afghan. IV: 162 (1959).

Distr. Mesopotamia, Iran, Afghanistan.

var. **chrysantha** (Hall) Sealy in Curtis's Bot. Mag. 165 t. 13 (1948).

Tulipa stellata Hooker f. var. *chrysantha* Hall, Gen. Tulipa, 22, 43, 85 t. 16 (1940).

Tulipa stellata var. Aitchison, T. L. S. XVIII: 103.

Tulipa stellata (non Hooker f.) Aitchison, l. c.

Tulipa Aitchisonii Hall in Journ. Bot. 76: 313 (1938).—Wendelbo, l. c. 161 et var. *clusianoides* Wendelbo, l. c.

Tulipa chrysantha Boiss., F. O. V: 193 quoad pl. ex Afgh. et Balut.

Koh-i-Asmai near Kabul (April 2, 1952 O. Suzuka).

Distr. Afghanistan., Pakistan.

Tulipa Greigii Regel in Acta Horti Petrop. II 447 (1873).—Vved., Fl. URSS IV: 335.—Bornm. in Engler, Bot. Jahrb. LXVI: 245 (1934).

Distr. Central Asia, Afghanistan (naturalized in garden).

Tulipa kushkensis B. Fedtsch. in Bot. Jahrb. L: 162 (1914) nom. nud., Fl. Turkm. II: 302 (1932).—Vved., l. c. 331.—Wendelbo, l. c. 162. Bot. Mag. t. 9370 (1934).

Distr. Gorn.—Turkm., Afghanistan (N W).

Tulipa lanata Regel in Acta Horti Petrop. VIII: 647 (1884).—Vved., l. c. 331.—Wendelbo, l. c. 162.

Distr. Pam.—Al., Afghanistan.

Tulipa Lehmanniana Merckl. in Mém. Sav. Étr. VII: 513 (1854).—Vved., l. c. 341.—Wendelbo, l. c. 162.

Tulipa montana (non Lindl.) Boiss., F. O. V: 192 quoad pl. ex Afgh.—Aitch., T. L. S. n. III: 119.

Distr. Central Asia, Afghanistan.

Tulipa linifolia Regel in Acta Horti Petrop. VIII: 648, t. V f. 1-2 a-e (p. p.) (1884), in Gartenfl. XXXV t. 1235 (1886).—Vved., l. c. 340.—Wendelbo, l. c. 163.

Koh-i-Asmai (April 2, 1952 O. Suzuka).

Distr. Pam.-Al., Afghanistan.

Tulipa Maximowiczii Regel in Acta Horti Petrop. X: 687 (1889), Gartenflora XXXVIII t. 1307 (1889).—Vved., l. c. 339.—Wendelbo, l. c. 163.

Distr. Pam.-Al., Afghanistan.

Tulipa polychroma Stapf in Denkschr. Akad. Wien L: 18 (1885).—Vved., l. c. 359.—Wendelbo, l. c. 163.

Tulipa humilis (non Herb.) Aitch., T. L. S. n. III: 119.

Distr. Caucasus, Iran, Afghanistan.

Amaryllidaceae

Ixiolirion montanum (La Bill.) Herb., App. (1821), Amaryll. 125, t. 20 (1837).—Aitch., T. L. S. n. III: 116.—Gorsch. in Fl. URSS IV: 491.

Distr. Asia Minor, Iran, Caucasus, Gorn.-Turkm., Afghanistan (W).

Ixiolirion tataricum (Pall.) Roem. et Schult., Syst. VII, 1: 752 (1829).—Gorsch., l. c. 490, Tab. XXX-4 (1935).—Wendelbo, l. c. 166.

Ixiolirion Pallasii Fisch. et Mey. ex Ledeb., Fl. Ross. IV: 116 (1853).—Boiss., F. O. V: 154.

Distr. W. Siberia, Central Asia, Afghanistan, Pakistan, Dz.-Kashg.

Narcissus Tazetta L., Sp. Pl. 290 (1753).—Bornm. in Engler, Bot. Jahrb. LXVI: 245 (1934).

Distr. A native of Mediterranean Region. Cult. in Afghanistan.

Ungernia trisphaera Bunge in Bull. Soc. Nat. Mosc. XLIX, 2: 273 (1875).—Aitch., T. L. S. n. III: 115.—Vved. in Fl. URSS IV: 482.—Wendelbo, l. c. 166.

Distr. Gorn.-Turkm., Iran, Afghanistan.

The native name is Pias-kuki (Aitch.).

Dioscoreaceae

Dioscorea deltoidea Wall. ex Kunth, Enum. V: 340 (1850).—Aitch., J. L. S. XVIII: 101.—Hooker f., F. B. I. VI: 291.—Wendelbo in Symb. Afgh. IV: 185 (1959).

Nuristan: Between Chatrass and Kushimaicot (Aug. 2, 1955 S. K.).

Distr. Afghanistan (E), Pakistan, Himalaya: from Kashmir to Bhutan, Khasia Hills.

Iridaceae

Crocus Korolkowi Regel et Maw in Gard. Chron. n. s. XIII: 531 (1880), Crocus 275, pl. 57.—Aitch., T. L. S. n. III: 115.—Fedtsch. in Fl. URSS IV: 506, Tab. XXXI-6, 9 (1935).—Wendelbo in Symb. Afgh. IV: 185 (1959).

Distr. Syr-Dar., Amu-Dar., Afghanistan.

Gladiolus Kotschyanus Boiss., Diag. Ser. I, XIII: 15 (1853).—Aitch., T. L. S.

n. III: 115.—Czerniakovska in Fl. URSS IV: 584 (1935).

Distr. Caucasus, Asia Minor, Arm.-Kurd., Iran, Afghanistan (NW).

Gladiolus segetum Ker-Gawl. in Bot. Mag. 1803 t. 719.—Wendelbo, l. c. 185.

Distr. Mediterr. Reg., Caucasus, Pam.-Al., Iran, Afghanistan.

Iris Aitchisoni Baker in Journ. Bot. XIII: 108 (1875).—Hooker f., F. B. I. VI: 272.

Distr. Afghanistan, Pakistan.

Iris Bartonii Foster in Gard. Chron. 1833, I: 275.—Boiss., F. O. V: 755.

Distr. Afghanistan (Kandahar).

Iris cabulica Gilli in Fedde, Rep. LVI: 149 (1954).—Wendelbo, l. c. 185.

Distr. Afghanistan.

Iris cycloglossa Wendelbo, l. c. 187, Fig. 72 (1959).

Distr. Afghanistan (W).

Iris drepanophylla Aitch. et Baker, T. L. S. n. III: 115 (1888).—Vvedensky in Fl. URSS IV: 575.—Wendelbo, l. c. 187, Fig. 73e.

Distr. Gorn.-Turkm., Afghanistan (W).

Iris ensata Thunb. in Trans. Linn. Soc. II: 328 (1794).—Aitch., J. L. S. XVIII: 100.—Boiss., F. O. V: 127.—Hooker f., F. B. I. VI: 272.—Fedtsch. in Fl. URSS IV: 518, Tab. XXXI-15 (1935).

Distr. Siberia (from Irt., Alt. to Dahuria), Central Asia: Pribalx., Dz.-Tarb., Syr-Dar., Tianshan., Afghanistan (Kuram), W. Himalaya, Tibet, Mongolia, China, Manchuria, Ussuri, Korea, Japan.

Iris falcifolia Bunge in Mém. Acad. Sci. Pétersb. VII: 505 (1851).—Boiss., F. O. V: 133.—Aitch., T. L. S. n. III: 114.—Fedtsch. in Fl. URSS IV: 534. Dykes, Iris: 128.

Distr. Kyz.-Kum., Kara-Kum., Afghanistan, Pakistan.

Iris foetidissima L., Sp. Pl. 30 (1753).—Boiss., F. O. V: 127.

Distr. Europe, North Africa, Caucasus.

The record from Afghanistan was doubted.

Iris Fosteriana Aitch. et Baker, T. L. S. n. III: 114 (1888).—Baker in Bot. Mag. t. 7215.—Vved. in Fl. URSS IV: 560.—Wendelbo, l. c. 187, Fig. 73b.

Distr. Gorn.-Turkm., Afghanistan (NW).

Iris halophylla Pallas, Reise Russ. Reichs II: 733 (1776).—Fedtsch. in URSS IV: 526.—Wendelbo, l. c. 188.

Iris spuria L. var. *halophila* (Pall.) Fedč. ex Bornm. in Engler, Bot. Jahr. LXVI: 245 (1935).

Iris Guldenstaediana Lepech. in Acta Acad. Petrop. I: 292 (1781).—Aitch., J. L. S. XVIII: 100, T. L. S. n. III: 114.—Boiss., F. O. V: 129.

Kabul, Dul-ul-Aman (July 18, 1955 S. K.)—cultivated.

Distr. Southern Russia, Caucasus, Central Asia, W. Siberia, Mongolia, Iran,

Afghanistan, Pakistan (Kuram).

Aitchison reported from Kuram, the plant with slightly yellow tinged flowers. The writer missed the colour of his specimen.

Iris linifolia O. Fedtsch. in Bull. Jard. Bot. St. Pétersb. V : 159 (1905).—Vved., l. c. 564.—Wendelbo, l. c. 188.

Distr. Central Asia, Afghanistan.

Iris microglossa Wendelbo, l. c. 189, Fig. 74 (1959).

Distr. Afghanistan.

Iris Sisyrinchium L., Sp. Pl. 40 (1754).—Boiss., F. O. V : 120.—Aitch., T. L. S. n. III : 114.—Wendelbo, l. c. 189.

Distr. Europe, North Africa, Asia Minor, Syria, Palestine, Iran, Afghanistan (W).

Iris songarica Schrenk in Fisch. et Mey., Enum. Pl. Nov. I : 3 (1841).—Boiss., F. O. V : 126.—Aitch., T. L. S. n. III : 114.—Wendelbo, l. c. 189.

Sclerosiphon songarica Nevski in Fl. et Syst. IV : 244 (1937).

Distr. Arm.—Kurd., Iran, Central Asia, Afghanistan, Pakistan, Dzung.—Kashg.

Iris Stocksii (Baker) Boiss., F. O. V : 123 (1884).—Gilli in Fedde, Rep. LVI : 148 (1954).—Wendelbo, l. c. 190 (1959).

Xiphium Stocksii Baker in Gard. Chron. 1876 : 723.

Distr. Afghanistan, Pakistan.

β. **purpurea** Baker ex Boiss., l. c.

Distr. Afghanistan (Kuram).

Orchidaceae

Cephalanthera longifolia (Huds.) Fritsch in Österr. Bot. Zeitschr. LXXXI (1888).—Nevski, in Fl. URSS IV : 632 (1935).

Cephalanthera ensifolia Rich. in Mém. Mus. Paris. IV : 60 (1818).—Aitch., J. L. S. XVIII : 100. Reich., Ic. XIII t. 118. Jacquem., Voy. t. 164.

Distr. Europe, North Africa, Caucasus, Central Asia, Asia Minor, Iran, Afghanistan, Pakistan, Himalaya : from Kashmir to Bhutan.

Epipactis latifolia (L.) All., Fl. Pedem. II : 151 (1785).—Boiss., F. O. V : 87.—Hooker f., F. B. I. VI : 125.—Reich., Ic. XIII–XIV t. 136.—Nevski in Fl. URSS IV : 624, Tab. XXXIX–3 (1935).

Helleborine latifolia (L.) Moench. Meth. Suppl. 311 (1802).—Bornm. in Engler, Bot. Jahrb. LXVI : 245 (1934).

Epipactis persica Hausskn. sec Renz in Symb. Afgh. IV : 192.

Distr. Europe, North Africa, Siberia, Caucasus, Asia Minor, Central Asia, Iran, Afghanistan, Himalaya : from Kashmir to Sikkim.

Epipactis Royleana Lindley in Royle, Ill Bot. Himal. 364 (1839).—Renz in Sym. Afgh. IV : 192 (1959).

Distr. Afghanistan, Pam.—Al., Kashmir.

Epipactis veratrifolia Boiss. et Hohen., *Diag. Ser. I*, XIII: 11 (1853), F. O. V: 87.—Aitch., J. L. S. XVIII: 100.—Nevski in *Fl. URSS IV*: 623 (1935).

Epipactis consimilis Hooker f., F. B. I. VI: 126.—Renz in *Symb. Afgh. IV*: 192 (1959).

Distr. Syria, Balk.—Asia Minor, Arm.—Kurd., Caucasus, Iran, Afghanistan (Kuram), Pakistan, Himalaya: from Kashmir to Nepal.

Goodyera repens (L.) R. Br. in Ait., *Hort. Kew.* 2 ed. V: 198 (1813).—Aitch., J. L. S. XVIII: 100.—Hooker f., F. B. I. VI: 111.—Nevski in *Fl. URSS IV*: 639, Tab. XXXIX, 11 (1935).

Distr. Europe, North Asia, Central Asia, North America, Pakistan (Kuram), Himalaya: from Simula to Sikkim.

Habenaria Aitchisonii Reich. f. ex Aitch., T. L. S. n. III: 113 (1888).

Habenaria brachyphylla Aitch. (non Lindley), J. L. S. XIX: 188.

Distr. Pakistan (Kuram etc.), Himalaya: Sikkim.

Mycrostylis muscifera Ridley in *Journ. Linn. Soc. XXIV*: 333 (1888).—Hooker f., F. B. I. V: 689.

Dienia muscifera Lindley, *Gen. et Sp. Orch.* 23 (1830).—Aitch., J. L. S. XIX: 188.

Distr. Pakistan (Kuram), Himalaya: from Kashmir to Sikkim.

Orchis latifolia L., *Sp. Pl.* 941 (1753).—Aitch., J. L. S. XVIII: 99, T. L. S. n. III: 113.—Boiss., F. O. V: 71 pro parte.—Hooker f., F. B. I. VI: 127.—Nevski in *Fl. URSS IV*: 717, Tab. XLII-8 (1835).

Epipactis persica Schltr. sec Renz in *Symb. Afgh. IV*: 192.

Nuristan: Between Pushuki and Kushitaki (Aug. 4, 1955 S. K.), between Chatrass and Kushimaicot (Aug. 2, 1955 S. K.).

Distr. Europe, North Africa, Asia Minor, Siberia, Central Asia, Iran, Afghanistan. Dzung.—Kashgar, Himalaya: from Kashmir to Nepal, Mongolia.

The upper leaves scarcely attaining to the base of the inflorescence. The spur obtuse shorter than the ovary. The lip slightly three lobed.

Aitchison reported (in T. L. S. n. III: 114) *Orchis laniflora* Lam. from Badghis, Afghanistan. This may be *Orchis palustris* Jacq.

Dicotyledoneae

Choripetalae

Salicaceae

Balsamiflua euphratica (Oliver) Kimura in *Sci. Rep. Tohoku Univ. Ser. Biol. XIV*, 2: 191 (1939).

Populus euphratica Oliver, *Voy. Emp. Ottoman III*: 449, fig. 45-46 (1807).—Boiss., F. O. IV: 1194.—Aitch., T. L. S. n. III: 111.—Hooker f., F. B. I. V: 638.—Rehder, *Manual.* 2 ed. 82 (1941). Brandis *Forest Fl.* t. 63.

Distr. Egypt, Syria, Mesopotamia, Iran, Central Asia, Afghanistan, Pakistan.

The native name in Afghanistan is Padda or Paddak according to Aitchison.

Populus alba L., Sp. Pl. 1034 (1753).—Aitch., J. L. S. XVIII: 96.—Komarov in Fl. URSS V: 225.

Distr. Europe, North Africa, cultivated in Afghanistan, Caucasus, W. Siberia, Central Asia, Asia Minor, Syria, W. Himalaya, W. Tibet.

f. **pyramidalis** (Bunge) Dippel, Handb. Laubh. II: 191 (1892).—Rehder, Manual 2 ed. 73 (1951).

Populus alba L. var. *denudata* Aitch. (non Wesmael), J. L. S. XVIII: 96.

Populus alba ssp. *Bolleana* (Lauche) Bornm. in Engler, Bot. Jahrb. LXVI: 244 (1934).

Kabul, Chelston Park cultivated (July 14, 1955 S. K.)—sterile.

Populus nigra L., Sp. Pl. 1034 (1753).—Aitch., T. L. S. n. III: 111.

Cultivated in Afghanistan (W) according to Aitchison.

Distr. A native of Europe and Western Asia.

var. **afghanica** Aitchison et Hemsl., J. L. S. XVIII: 96.

Distr. Afghanistan and Pakistan (Kuram).

Aitch. and Hemsl. described the female plant with small ovato-rhomboidal leaves.

var. **italica** (Münchh) Koehne, Deutsche Dendr. 81 (1893).—Rehder, Manual 2 ed. 79 (1941).

Populus nigra β. *italica* Duroi, Harbk. Baumz. II: 141 (1772).—Bornm. in Engler, Bot. Jahrb. LXVI: 244 (1934).

Populus pyramidalis Rozier, Cours d'Agric. VII: 619 (1786).—Nasarov in Fl. URSS V: 230.

Charikar cultivated (June 24, 1955 S. K.)—sterile.

Distr. The native country is obscure, though Griffith considered this tree to be wild in Afghanistan.

This is the most important timber in this country, cultivated in the irrigated fields or along streams. The propagation by cuttings. The timbers are used for the buildings and for various furnitures.

Populus pamirica Kom. in Journ. de Bot. de l'URSS no. 5: 510 (1934), in Fl. URSS V: 236 (1936).

Populus balsamifera Hooker f. (non L.), F. B. I. V: 638 pro parte.

Nuristan: Between Chatrass and Kushimaicot (Aug. 2, 1955, S. K.)—with female catkins, between Trokikorl and Chatrass (Aug. 1, 1955 S. K.)—sterile.

Distr. Afghanistan, Pakistan, Pamiro-Al.

Salix acmophylla Boiss., Diag. Pl. Or. Ser. I, VII: 98 (1846), F. O. IV: 1183.—Anders., Monogr. 7, tab. 1-6 (1867).—Hooker f., F. B. I. V: 628.—Aitch., J. L. S. XVIII: 95, T. L. S. n. III: 111.—Nasarov, Fl. URSS V: 194 (1936).

Distr. Syria, Arm.-Kurd., Mesopotamia, Iran, Kara-Kum. Amu-Dar., Afghanistan,

Pakistan.

Salix acutifolia Willd., Sp. Pl. IV, 2: 668 (1805).—Reich., Ic. Fl. Germ. XI, t. 603–1255.—Nasarov in Fl. URSS V: 181, Tab. IX-2 (1936).

Salix daphnoides Aitch. (non Vill.), J. L. S. XVIII: 96.—Hooker f., F. B. I. V: 631.

Distr. Europe, Siberia, Central Asia, Afghanistan (Kuram), W. Himalaya, W. Tibet.

Salix alba L., Sp. Pl. 1021 (1753).—Boiss., F. O. IV: 1185.—Anders., Monogr. 47, t. III-30.—Aitch., T. L. S. n. III: 111.—Hooker f., F. B. I. V: 629.—Nasarov in Fl. URSS V: 188, Tab. IX-4 (1936). Reichenb., Ic. Fl. Germ. XI, t. 608–1263.

Nuristan: Chatrass (Aug. 2, 1955 S. K.)—with female catkins, between Pushuki and Kushitaki (Aug. 4, 1955 S. K.)—with female catkins.

Distr. Europe, North Africa, Caucasus, W. Siberia, Central Asia, Asia Minor, Iran, Afghanistan.

According to Hooker, in India, *Salix alba* is cultivated only.

Salix araeostachya Schneider in Sargent, Pl. Wilson. III: 96 (1916).—Görz. ex Bornm. in Engler, Bot. Jahrb. LXVI: 244 (1934).

Distr. China, Afghanistan (cult. in Kabul, Dar-ul-Aman).

Salix babylonica L., Sp. Pl. 1017 (1753).—Boiss., F. O. IV: 1185.—Anders., Monogr. 50 Tab. II-32.—Aitch., T. L. S. n. III: 111.—Hooker f., F. B. I. V: 629.

Kandahar (June 6, 1955 S. K.)—sterile, pendulous.

Distr. A native of middle China, now widely planted as a street tree in the world.

This willow is commonly planted along the irrigated road-side.

Salix Daviesii Boiss., Diag. Ser. I, VII: 98 (1846), F. O. IV: 1184.—Anders., Monogr. 9.—Aitch., T. L. S. n. III: 111.

Distr. Iran, Afghanistan (W).

Salix elegans Wall. ex Anders. in DC., Prodr. XVI, 2: 256 (1868).—Aitch., J. L. S. XVIII: 95.—Hooker f., F. B. I. V: 630.

Salix denticulata Anders. in Svensk Vetensk. Akad. Handl. 1850: 481, Reise Pr. Wald. 119, t. 89.

Distr. Pakistan (Kuram), Himalaya: Marri to Nepal.

Salix pychnostachya Anders. in Journ. Linn. Soc. IV: 44 (1860), in DC., Prodr. XVI, 2: 309 (1868).—Aitch., J. L. S. XVIII: 96.—Hooker f., F. B. I. V: 636.—Nasarov in Fl. URSS V: 163.

Distr. Central Asia, Iran, Afghanistan, Pakistan, W. Himalaya, W. Tibet.

Salix songarica Anders., Monogr. 53, Tab. III-34 (1867).—Aitch., T. L. S. n. III: 111.—Nasarov in Fl. URSS XV: 204, Tab. IX-5 (1936).

Distr. Central Asia, Afghanistan (W), Dz.-Kashg.

Salix Wallichiana Anders. in Svenska Vetensk. Akad. Handl. 1850: 477 (1851), Monogr. 80, Tab. V-46 (1867).—Hooker f., F. B. I. V: 628.

Salix grisea Wall. ex Aitch., J. L. S. XVIII: 96.

Distr. Pakistan (Kuram), Himalaya: from Kashmir to Bhutan, W. China.

Salix Wilhelmsiana Bieb., Fl. Taur. Cauc. III (Suppl.): 627 (1819).—Schneider in Sargent, Pl. Wilson. III: 169 (1916).—Nasarov in Fl. URSS V: 164, Tab. VIII-1 (1936).

Salix angustifolia Willd., Sp. Pl. IV: 699 (1805) non Wulfen (1789).—Aitch., J. L. S. XVIII: 95.—Hooker f., F. B. I. V: 636.

Distr. E. Europe, Caucasus, Central Asia, Iran, Afghanistan, Dz.-Kashg., Kashmir.

Juglandaceae

Juglans regia subsp. ***fallax*** Popov in Bull. App. Bot. XXII, 3: 204 (1929).

Juglans regia L., *λ. beloudchistana* C. DC., Prodr. XVI, 2: 136 (1864).

Juglans regia Aitch. (non L.), J. L. S. XVIII: 95.—Hooker f., F. B. I. V: 595 pro parte.

Juglans fallax Dode in Bull. Soc. Dendr. Fr. 89, Fig. p. 83, 96 (1906).—Nekrasova in Fl. URSS V: 251 (1936).—Nevski in Fl. et Syst. IV: 268 (1937).

Nuristan: Voma (July 30, 1955 S. K.)—young fruits with very thick shell, Eschtaway (Aug. 6, 1955 S. K.)—young fruits with thick shell, between Trokikori and Chatrass (Aug. 1, 1955 S. K.)—young fruits with thin shell, ibidem—with thick cell. Pagman near Kabul (July 15, 1955 S. K.)—cultivated.

Distr. Syr-Dar, Pam.-Al., Iran, Afghanistan, Tibet, Pakistan: Chaman Pass (May 31, 1955 S. K.)—sterile, Quetta in Agric. Exp. Station (May 26, 1955 S. K.)—young fruits with thin shell.

Leaflets 3-4 pairs, oblong apex acute or shortly acuminate.

Subsp. *regia*; leaflets 2-3 pairs, broadly oblong apex obtuse.

Distr. Asia Minor, Caucasus, Mesopotamia, Iran, Gorn.—Turkm.

Subsp. *kumaonica*: leaflets, 3-5 pairs, oblong apex acuminate.

Distr. Himalaya: from Kashmir to Nepal.

J. regia subsp. *fallax* is not rare along the Pech River in Nuristan. It is wild there. The thickness of the shell of the wild plants is variable. The writer purchased many walnuts in the markets at Quetta, Kandahar, Kabul, Tashikurgan and Mazari-sharif. It is called Charmazh. The fruits sold at the markets have usually thin shell. The largest one 4 cm long 3.3 cm broad. The smallest one 2.6 cm long 2.1 cm broad. *Juglans regia* subsp. *regia* was not collected in Afghanistan.

The native place of *J. regia* subsp. *regia* is from Iran to Asia Minor.

The Sino-Japanese var. *orientis* (Dode) Kitamura is closely related to var. *regia*. Var. *orientis* is not wild in the Sino-Japanese region. The latter is supposed to have been introduced from Iran through the Silk Road in ancient times.

Betulaceae

Betula Jacquemontii Spach in Ann. Sci. Nat. Bot. Sér. 2, XV: 189 (1841).—

Jacquem., Voy. Bot. t. 158.—Schneider in Sargent, Pl. Wilson. II: 473 (1916).—Rehder, Manual. ed 2. 126.

Betula utilis sensu Hooker f., F. B. I. V: 599 p. p.

Betula Bhojpattra sensu Aitch., J. L. S. XVIII: 95.

Nuristan: Between Pushuki and Kushitaki (Aug. 4, 1955 S. K.).

Distr. Afghanistan (E), Pakistan, Himalaya: from Kashmir to Kumaon.

The leaves ovate, irregularly serrate, underside glandular, along the base of nerves densely and patently hairy, nerves 5–6. Inflorescence 2–2.5 cm long, stalk glandular and minutely pubescent. Young branches are covered by discoid glands. The bark is white, and is used as a substitute of paper in Nuristan.

The westernmost race of *B. Jacquemontii* is distinguished by the leaves with fewer nerves (5–6, not 6–9) from the eastern races.

Corylus Columna L., Sp. Pl. 999 (1753).—Boiss., F. O. IV: 117.—Reich., Ic. t. 638–1303.—Bobrov in Fl. URSS V: 263, Tab. XII–41 (1936).

Corylus Jacquemontii Decne. in Jacquem., Voy. Bot. t. 160.

Nuristan: Between Kushimaicot and Pushuki (Aug. 3, 1955 S. K.).

Distr. E. Europe, Caucasus, Asia Minor, Iran, Afghanistan, Himalaya: from Kashmir to Kumaon.

Fagaceae

Quercus Baloot Griffith, Itin. Notes 328 (1848).—Boiss., F. O. IV: 1168.—Bornm. in Engler, Bot. Jahrb. LXVI: 243.—A. Camus, Les Chênes, t. 37: t. XX, fig. 31, 38, 39 (1934). **Fig. 19, 20.**

Quercus Ilex Aitch. (non L.), J. L. S. XVIII: 95.—Hooker f., F. B. I. V: 602.

Between Kandai and Seprigal (June 28, 1955 S. K.)—young fr., between Voma and Trokikorl (June 31, 1955 S. K.)—sterile.

Distr. Afghanistan, Pakistan, Himalaya: Kashmir to Kumaon. (according to Hooker f. as *Q. Ilex*).

Differs from *Q. Ilex* by the oboval cupule constricted at the mouth, and provided with many seriate imbricated small scales. The leaves are usually coriaceous and very variable in shape, entire or spinose dentate, glabrous or densely covered with very minute stellate hairs.

In Nuristan, *Q. Baloot* grows from 1020 m up to 2100 m. It is dominant between 1200 m and 1800 m (warm temperate region). At 1020 m, it is 6–10 m high. The branches with spinose leaves are used for hedges of gardens against animals.

Quercus dilatata Lindley ex Royle, Illustr. 346, t. 84.–2 (1839).—A. DC., Prodr. XVI, II: 41 (1864).—Aitch., J. L. S. XIX: 186.—Hooker f., F. B. I. V: 602.—Kitamura in Fauna and Flora of Nepal Himalaya 106 (1955).

Distr. Afghanistan (Kuram), Pakistan, Himalaya: from Kashmir to Nepal, China: Yunnan, Szechuan.

Quercus semicarpifolia Smith in Rees. Cycl. XXIX no 20 (1819).—Aitch., J. L. S. XVIII: 95.—Hooker f., F. B. I. V: 601.—Kitamura, l. c. 109.

Distr. Afghanistan (E), Pakistan, Himalaya, Burma.

Ulmaceae

Celtis caucasica Willd., Sp. Pl. IV, 2: 994 (1806).—Aitch., J. L. S. XVIII: 93 T. L. S. n. III: 108.—Schneider, Ill. Handb. Laubholz. I: 231, fig. 147 e-e², 148 t. (1904).—Jarmolenko in Fl. URSS V: 374, Tab. XX-10 (1936).

Celtis australis sensu Hooker f., F. B. I. V: 482.—Kitamura in Fauna and Flora of Nepal Himalaya, 109 (1955).

Nuristan: Between Chatrass and Budigrah (Aug. 2, 1955 S. K.)—with fruits, Voma (July 30, 1955. S. K.)—sterile, between Siyagird and Charikar (July 11, 1955 S. K.)—sterile.

Distr. Caucasus, Central Asia, Arm.-Kurd., Iran, Afghanistan, Pakistan, Himalaya: from Marri to Nepal.

Ulmus glabra Hudson, Fl. Ang. 95 (1762) excl. var. β .—Moss, Cambridge Brit. Fl. II: 95, t. 104, 105 (1914).—Schneider in Sargent, Pl. Wilson. III: 254 (1916).—Rehder, Manual 2 ed. 176 (1941).

Ulmus campestris L., Sp. Pl. 225 p. p. (1753).—Aitch., J. L. S. XVIII: 93.

Ulmus montana Withering, Bot. Arr. Veg. Gt. Brit. ed. 2, I: 259 (1787).—Aitch., T. L. S. n. III: 108.

Kabul, tomb of Baber cultivated (July 14, 1955 S. K.)—sterile, leaves scabrous, Pulikhumri cultivated as street tree (July 5, 1955)—sterile, leaves scabrous, Kabul, street tree (May 10, 1955 K. Yamashita)—with fruits, leaves glabrous.

Distr. Europe and Western Asia.

Native names: Pash-e-kham, and Grez, according to Aitchison.

Moraceae

Ficus altissima Blume, Bijd. 444 (1825).—King in F. B. I. V: 504 (1888).

Ficus laccifera Roxb., Fl. Ind. III: 546 (1832).—Wight, Ic. t. 656.—Bornm. in Engler, Bot. Jahrb. LXVI: 243 (1934).

Distr. Jalalabad cultivated, a native of India and Malay Islands.

Ficus bengalensis L., Sp. Pl. 1059 (1753).—King in F. B. I. V: 499 (1888).

Jalalabad cultivated (June 16, 1955 S. K.).

Distr. A native of India.

Ficus Carica L., Sp. Pl. 1059.—Aitch., J. L. S. XVIII: 94, T. L. S. n. III: 109, Pl. 46.

var. **Johannis** Boiss., F. O. IV: 1154.

F. Johannis Boiss., Diag. Ser. I, VII: 96 (1846).

F. persica Boiss., Diag. Ser. I, VII: 97 (1846).

Between Mazarisharif and Haibak, cultivated (July 1, 1955 S. K.)—A tree with

gall flowers, Kandahar cult. (June 8, 1955 S. K.)—♂ tree without fl., between Bulola and Doab, along Bamian River (June 25, 1955 S. K.)—♀ tree wild, growing in the crevices of large rocks.

Distr. sp. Mediterranean Region. var. *Johannis*, Iran, Afghanistan, Pakistan.

The writer observed several female fig trees growing wild along Bamian River. The leaves are 5 or 3 fid to the middle, the lobes oblong repand-dentate, above densely covered with short stiff hairs. The receptacles densely covered with stiff short hairs, sphaerical sitpitate, stipe 5–7 mm long, peduncle short 5–7 mm long.

The receptacles not yet matured 16 mm in diameter. He collected male fig trees (caprifigs) in a garden. The leaves are 5-fid to the middle, the lobes are oval, and pinnatifid to the middle. The receptacles sphaerical 16–20 mm in diameter, without stipe, peduncle longer 2–3 cm long.

Aitchison and Hemsley reported wild fig trees from the northwest of Afghanistan. The writer maintains the conception of Aitchison and Hemsley. Bamian River may be the north-eastern limit of the distribution of this species at present. The native name of the cultivated fig in Afghanistan is Anjir, and that of the wild fig is Anjire-Kohi. Kohi means mountain.

The writer interested in the Chinese articles on fig tree. cf. B. Laufer, *Sino-Iranica*: 410–414. In Yu yan tsa tsu (西陽雜俎) written towards the end of the 8th century, Tuan Cheng Shi (段成式) wrote that Atsu (阿朮): fig came from Persia. In Pien min tie tsuan (便民圖纂) of Ming dyn., the fig was called Ying-Jeh-Kuo. Kuo means a fruit. The figure of fig in Ci wo min si tu kao (植物名實用考) has 5-fid leaves and a round fruit. These names and the figure suggest that the fig tree of ancient China was introduced from Iran or Afghanistan, and that the race may be *Ficus Carica* var. *Johannis* Boiss. which is wild and cultivated in Afghanistan and Iran. According to the Yamato-hozo of 1709, figs were first introduced into Nagasaki in the period Kwan-ei (1624–44). E. Kaemper stated that figs were brought into Japan and planted by Portuguese. The Japanese old type has mainly 3-lobed leaves.

In China and Japan, the Caprifig was not introduced until recently. The fig trees were propagated by cuttings.

Ficus palmata Forsk., Fl. Aegypt. Arab. 179 (1775).—King in F. B. I. V: 530.

Ficus caricoides Roxb., Fl. Ind. III: 529 (1832).—Aitchison, J. L. S. XVIII: 94.

Ficus virgata Roxb., 1. c.: 530 (1832).—Boiss., Fl. Orient. IV: 1155 (1879).

Between Siyagird and Charikar (July 11, 1955 S. K.), Kalatus-Sirai (June 16, 1955 S. K.), Eastern Prov. between Kandai and Seprigal (July 28, 1955 S. K.), Nuristan: Between Voma and Seprigal (July 29, 1955 S. K.).

Distr. Pakistan, Afghanistan, Iran, westward to Egypt and Abyssinia.

The receptacle is edible.

Ficus religiosa L., Sp. Pl. 1059 (1753).—King in F. B. I. V: 513 (1888). **Fig. 5.** Jalalabad cultivated (June 16, 1955 S. K.).

Distr. A native of India.

Morus alba L., Sp. Pl. 986 (1753).—Aitch., J. L. S. XVIII: 96, T. L. S. n. III: 109.

Kandahar, cult. (June 8, 1955 S. K.).

Distr. A native of China. The writer saw large trees of *Morus alba* naturalized in Nuristan along the Pech River. In Afghanistan *M. alba* is frequently cultivated as roadside tree. The fruits are generally eaten in a flesh state as well as dried. The leaves are rarely used for feeding silk-worms. The native name is Tut.

Urticaceae

Debregeasia salicifolia (Don) Rendle in Prain, Fl. Trop. Afr. VI, II: 295 (1913).

Boehmeria salicifolia Don, Prodr. Fl. Nep. 60 (1825).

Debregeasia bicolor (Roxb.) Wedd. in DC., Prodr. XVI, I: 235 (1869).—Boiss., F. O. IV: 1148.

Debregeasia hypoleuca Wedd. in Arch. Mus. Paris VIII: 463, t. 15, A. f. 10. 11 (1855-6).—Satake in Fauna and Flora of Nepal Himalaya 111 (1955).

Distr. Abyssinia, Afghanistan, Himalaya: Kashmir to Nepal.

Forskohlea tenacissima L., Mant. 72 (1767).—Lamk., Ill. t. 388-1.—Boiss., F. O. IV: 1151.—Hooker f., F. B. I. V: 593.

Distr. Mediterranean Region, Afghanistan, Pakistan.

Parietaria chersonensis (Lang et Szov.) Dörfer, Herb. Norm. no 3581 (1898).—Jarmolenko in Fl. URSS V: 401, Tab. XXII-3 (1936).

Between Doab and Charikar (July 11, 1955 S. K.).

Distr. E. Europe, Central Asia (common), Afghanistan, Pakistan, Iran, Balk.-Asia Minor.

Aitchison reported *P. debilis* Forst. from Kuram. The latter may be this species.

Parietaria judaica Strand., Linnaei Am. Acad. IV: 464 (1759).—L., Sp. Pl. 2 ed. 1492 (1763).—Hooker f., F. B. I. V: 592.—Jarmolenko in Fl. URSS V: 400 (1936).

Parietaria officinalis Aitch., J. L. S. XVIII: 94.

Nuristan: Between Voma and Trokikorl (July 31, 1955 S. K.).

Distr. Central Asia (common), Afghanistan, Pakistan, Dz.-Kashg., Iran, Arm.-Kurd., Asia Minor, Greece.

Pouzolzia pentandra Benn., Fl. Jav. 64 t. 14 (1838).—Hooker f., F. B. I. V: 583.

Memoralis pentandra Wedd. in DC., Prodr. XVI, II: 235 (1869).—Boiss., F. O. IV: 1148.—Wight Ic. t. 696.

Distr. Afghanistan, Himalaya: from Kangra to Assam, Khasia Mts., India, Java.

Urtica dioica L., Sp. Pl. 984 (1753).—Aitch., J. L. S. XVIII: 94.—Jarmolenko in

Fl. URSS V : 392. Reichb., Ic. XII, t. 654.

Nuristan (1955 S. K.), Chardi-i-Ghorband (July 11, 1955 S. K.).

Distr. Europe, North Africa, Asia Minor, Caucasus, Siberia, Central Asia, Iran, Afghanistan, Pakistan, Himalaya, Tibet.

Cannabinaceae

Cannabis sativa L., Sp. Pl. 1027 (1753).—Aitch., J. L. S. XVIII : 94.—Hooker f., F. B. I. V : 487.

Nuristan : Between Kushimaicot and Pushuki (Aug. 3, 1955 S. K.), between Kandai and Seprigal (July 28, 1955 S. K.). Gunoy near Sarobi (June 15, 1955 S. K.).

Distr. Afghanistan (E), Pakistan : Swat Himalaya, Yarkhunr (K. Ogino), Karakoram, Gilgit (S. Nakao).

Cannabis sativa is not cultivated in Afghanistan. It is wild. The stem 30–100 cm high, with many branches. Leaf-blade smaller 3.5–8 cm long.

Santalaceae

Aitchison reported *Thesium divaricatum* Jan. (J. L. S. XVIII : 92) from Pakistan (Kuram).

Loranthaceae

Korthalsella japonica (Thunb.) Engler in Pflanzenfam. Nachtr. I : 138.

Viscum japonicum Thunb. in T. L. S. II : 329 (1794).—Hooker f., F. B. I. V : 226.

Nuristan : Between Voma and Trokikorl ! (31 July, 1955 S. K.)—on *Quercus* Baloot.

Distr. Afghanistan (E), Himalaya, India, China, Japan, Malaysia.

Viscum album L., Sp. Pl. 1023 (1753).—Aitch., J. L. S. XVIII : 92.—B. Fedtschenko in Fl. URSS V : 411, Tab. XXIII-3. (1936).

Nuristan : Between Chatrass and Voma (Aug. 11, 1955 S. K.)—with young fr. on *Quercus* Baloot.

Distr. Europe, North Africa, Caucasus, Asia Minor, Iran, Afghanistan, Himalaya : from Kashmir to Nepal.

Viscum articulatum Burm., Fl. Ind. 311 (1768).—Aitch., J. L. S. XVIII : 92.—Hooker f., F. B. I. V : 226.

Distr. Afghanistan (Kuram), Pakistan, Himalaya, India, Malaysia, China.

Balanophoraceae

Cynomorium songaricum Rupr. in Mém. Acad. Sc. Pétersb. VII, sér. XIV, 4 : 73 (1869).—Gorshkova in Fl. URSS XV : 671 (1949).

Cynomorium coccineum Boiss. (non L.), F. O. IV : 1072.—Aitch., T. L. S. n. III : 197.

Distr. Pribalx., Pamiro-Al., Tianshan, Iran, Afghanistan (W), Dz.-Kash., Mongolia.

Polygonaceae

Atraphaxis affghanica Meisn. in DC., Prodr. XIV : 76 (1854).—Boiss., F. O. IV : 1022.

Distr. Afghanistan (Reg. Kabul).

Atraphaxis laetevirens (Ledeb.) Jaub. et Spach, Ill. Pl. Or. II : 14 (1844).—Aitch., T. L. S. n. III : 105.—Pavlov, Fl. URSS V : 514 (1936). Ic. Ledeb., Fl. Ross. V. t. 422.

Distr. Siberia, Dz.-Tarb., Afghanistan (sec Aitch.).

Atraphaxis spinosa L., Sp. Pl. 475 (1753).—Pavlov, l. c. 505.

δ. glauca Boiss., F. O. IV : 1021.

Distr. sp. East Mediterranean Region, Balkan, Asia Minor, E. Europe, Caucasus, W. Siberia, Central Asia (common), Iran : Rezaiye (July 29, 1955 H. Kihara), Afghanistan, Dz.-Kashg.

Calligonum stenopterum Bunge ex Boiss., F. O. IV : 999 (1879).

Distr. Iran, Afghanistan.

Fagopyrum esculentum Moench, Method. 290 (1794).—Kitamura in Fauna and Flora of Nepal Himalaya 115 (1955).

Nuristan : Between Pronz and Eschtaway (Aug. 5, 1955 S. K.)—growing as weeds in the cultivated field.

Distr. A native of Eurasia.

Oxyria digyna (L.) Hill, Hort. Kew. 158 (1769).—Boiss., F. O. IV : 1004.—Losina-Losinskaja in Fl. URSS V : 444 (1936).—Kitamura in Fauna and Flora of Nepal Himalaya 115 (1955).

Oxyria reniformis Hooker, Fl. Scot. III : 111 (1821).—Aitch., J. L. S. XVIII : 91.

Nuristan : Pushuki (Aug. 8, 1955 S. K.), Eschtaway (Aug. 5, 1955 S. K.), Trokikori (July 31, 1955 S. K.).

Distr. Alpine and arctic regions of the northern Hemisphere.

Polygonum (Avicularia) **afghanicum** Meisn. in DC., Prodr. XIV : 90 (1854).—Boiss., F. O. IV : 1051.—Aitch., T. L. S. n. III : 105.

Shibar Pass (June 24, 1955 S. K.).

Distr. Afghanistan, Iran.

Polygonum (Bistorta) **affine** Don, Prodr. Fl. Nep. 70 (1825).—Hooker f., F. B. I. V : 33.—Steward, Contr. G. H. LXXXVII : 28 (1930).—Kitamura, Nep. 115 (1955). Royle, Ill. t. 80, f. 3. Bot. Mag. t. 6472. **Fig. 36, 39.**

Nuristan : Shabul Gul (Aug. 5, 1955 S. K.).

Distr. Afghanistan (E), Pakistan, Himalaya : from Kashmir to Nepal, Western Tibet.

Polygonum (Aconogon) **alpinum** All., Ped. I : 206, t. 68 (1785).—Boiss., F. O. IV : 1031.—Grigor. in Fl. URSS V : 663 (1936).

Distr. W. Europe, Caucasus, Siberia, Dahuria, Central Asia, Afghanistan, Mong.,

Manchuria, Himalaya : Kashmir to Kula.

Polygonum (Persicaria) **amphibium** L., Sp. Pl. 361 (1753).—Steward in Contr. Gray Herb. LXXXVII: 42.

Distr. Northern Eurasia, North America.

Polygonum (Bistorta) **amplexicaule** Don, Prodr. Fl. Nep. 70 (1825).—Hooker f., F. B. I. V: 32.—Aitch., J. L. S. XVIII: 90.—Stew., 1. c. 30.—Kitamura, Nepal 115 (1955). Bot. Mag. t. 6500, Bot. Reg. 1839, t. 46.

Distr. Pakistan (Kuram), Himalaya, China.

Polygonum (Avicularia) **argyrocoleon** Steud. ex Kunze in Linnaea XX: 17 (1847).—Boiss., F. O. IV: 1035.—Stew., 1. c. 19 (1930).—Grigor. in Fl. URSS V: 634, Tab. XLIV-1 (1936).

Distr. Afghanistan, Caucasus, Central Asia, Iran, Mesopotamia.

Polygonum (Avicularia) **aviculare** L., Sp. Pl. 362 (1753).—Boiss., F. O. IV: 1036.—Aitch., J. L. S. XVIII: 90, T. L. S. n. III: 105.

Nuristan (S. K.).

Distr. Eurasia.

Polygonum (Avicularia) **biaristatum** Aitch. et Hemsl., J. L. S. XVIII: 90 (1880).—Stew., 1. c. 18.—Grigor. in Fl. URSS V: 607, Tab. XXXIX-5 (1936).

Distr. Central Asia, Afghanistan, Himalaya (sec Steward).

Polygonum (Bistorta) **Bistorta** L., Sp. Pl. 300 (1753).—Aitch., J. L. S. XIX: 185.—Steward, 1. c. 35 (1930).

Distr. Pakistan (Kuram), from Europe to Japan.

Polygonum (Avicularia) **cognatum** Meisn., Prodr. Polygon. 91 (1826).—Hooker f., F. B. I. V: 25.—Aitch., J. L. S. XIX: 185.—Steward, 1. c. 22.

P. alpestre C. A. Mey., Enum. Pl. Cauc. 157 (1831).—Jaub. et Spach, Ill. Or. t. 118.—Grigor. in Fl. URSS V: 609, T. XXXIX-2 (1936).

P. rupestre Kar. et Kir. in Bull. Soc. Nat. Mos. XIV: 740 (1841).—Grigor., 1. c. 609, Tab. XXXIX-6.

Distr. Caucasus, Asia Minor, Iran, Afghanistan, Altai, Central Asia, Tibet, Western Himalaya, Dz.-Kashg.

Polygonum (Tiniaria) **convolvulus** L., Sp. Pl. 364 (1753).—Boiss., F. O. IV: 1032.—Aitch., J. L. S. XVIII: 90.

Doab (June 24, 1955 S. K.).

Distr. Temperate region of the Northern Hemisphere, in Eastern Asia and North America naturalized.

Polygonum (Tiniaria) **dumetorum** L., Sp. Pl. 2 ed. 521 (1762).—Hooker f., F. B. I. V: 54.—Aitch., J. L. S. XVIII: 90.—Grigor. in Fl. URSS V: 695, Tab. XXXIX-5 (1936).

Nuristan: Between Voma and Chatrass (Aug. 1, 1955 S. K.), between Voma and Trokikorl (July 31, 1955 S. K.).



Fig. 47. *Polygonum glaberrimum* Kitam.: 1 Vertical section of Flower, 2 Tepal, 3 and 4 Bracts, 5 Achene, 6 Vertical section of Achene, 7 Albumen, 8 Embryo, 9 Panicle. (Nuristan: Shabul Gul).

Distr. Eurasia.

Polygonum (Avicularia) **equisetiforme** Sibth. et Smith, Fl. Graeca I: 269 (1806).—Boiss., F. O. IV: 1036.—Grigor. in Fl. URSS V: 610, Tab. XL-a-d (1936).

Distr. Caucasus, Central Asia, Afghanistan, Iran, Mediterranean Region.

Polygonum (Persicaria) **flaccidum** Meisn. in DC., Prodr. XIV, 107 (1854).—Hooker f., F. B. I. V: 39.—Aitch., J. L. S. XIX: 185.

Distr. Pakistan (Kuram), India, Malay Archipelago.

Polygonum (§ Aconogon) **glaberrimum** Kitamura in Acta Phytotax. Geobot. XVII: 141 (1958). **Fig. 47.**

Species *Polygonum bucharico* affinis a quo omnibus partibus glaberrimis, foliis nec acutis differt. A *P. Zaravschanico* (e descriptione) foliis inferioribus ovatis (nec obovatis), crassiusculis (nec tenuis), caule elatiore.

Rhizoma perenne obliquum lignosum, fuscum. Caulis caespitosus 75 cm altus erectus teres striatus glaber inferne 5–6 mm diametro, ad inflorescentiam ramosus. Folia radicalia sub anthesi emarcida, caulina ovato-oblonga vel ovata 9–11.5 cm longa 3.2–5 cm lata sursum acuminata apice rotundata vel sursum gradatim obtusa, basi rotundata vel truncata in petiolum breviter cuneata, petiolo exalato 7–13 mm longo, margine undulata sub lente regulariter minutissime cartilagineo-denticulata interdum ciliolata utrinque glabra textura crassiuscula. Ochreae inferiores ad 2.8 cm longae glabrae membranaceae truncatae. Folia caulina superiora sursum gradatim minora ovata. Paniculae ad apices caulis terminantes vel ex axilibus foliorum superiorum provenientes 3.5 cm longae in fructu nutantes, rachidibus gracilibus angulatis glabris, bracteis membranaceis 1.5 mm longis glabris, pedicellis solitariis 3–5 mm longis apice dilatatis. Corolla alba vel rubescens late campanulata demum 5 mm diametro 4.5 mm longa usque ad basim 5-partita, laciniis obovatis apice rotundatis utrinque glabris. Achenia triquetra laevia 4 mm longa 2.5–3 mm lata, perianthiis breviora.

Nuristan: Shabul Gul in locis lapidosis secus rivulos (Aug. 5, 1955 S. K.).—Typus in Herb. Univ. Kyoto. Swat Himalaya, between Diwanger and Pickar 3600 m (July 28, 1955 K. Ogino), between Mahidan and Diskei 2900 m (July 21, 1957 K. Honda).

Distr. Afghanistan, Pakistan.

Polygonum (Persicaria) **glabrum** Willd., Sp. Pl. II: 447 (1799).—Hooker f. F. B. I. V: 34.—Aitch., J. L. S. XVIII: 90.

Distr. Pakistan (Kuram), India, Himalaya, Burma, China, Indo-China, Philippines.

Polygonum (Persicaria) **lapathifolium** L., Sp. Pl. 360 (1753).

var. **salicifolium** Sibth., Fl. Onon. 129 (1794).—Steward, l. c. 46 (1930).

Pulikhumri (July 3, 1955 S. K.), Shibar (July 10, 1955 S. K.).

Distr. Afghanistan, Tibet, Sungaria, Assam, Amur, China, Japan, Indo-China, Java.

Polygonum (Avicularia) **Lemannianum** Meisn. in DC., Prodr. XIV: 91 (1854).—Boiss., F. O. IV: 1041 (1879).

Distr. Afghanistan.

According to Stewart this is *P. tubulosum* Boiss.

Polygonum (Cephalophilon) **nepalense** Meisn., Monogr. 84, t. VII, f. 2 (1826).—Aitch., J. L. S. XVIII: 90.—Steward, l. c. 74 (1930).—Kitamura in Fauna and Flora of Nepal Himalaya 118 (1955).

Polygonum alatum Hamilton ex Don, Prodr. Fl. Nep. 72 (1925) pro syn.—Grigor. in Fl. URSS V: 640 (1936).

Polygonum perforatum Meisn., l. c. 83 (1826).—Aitch., J. L. S. XVIII: 90.
f. **scabridum** (Meisn.).

P. nepalense β. *scabridum* Meisn., l. c.

Nuristan: Between Chatrass and Kushimaicot (Aug. 2, 1955 S. K.), between Voma and Trokikorl (July 31, 1955 S. K.), between Trokikorl and Chatrass (Aug. 2, 1955 S. K.).

Distr. sp. Abyssinia, Afghanistan, Pam.-Al., Himalaya: from Kashmir to Sikkim, Khasia Mts., India, China, Ussuri, Japan, Malaya.

Polygonum (Persicaria) **nodosum** Pers., Syn. I: 440 (1805).—Reich., Ic. Fl. Germ. XXIV, t. 216 (1909).—Grigor, l. c. 649, Tab. XLV-4 (1936).—Ohwi, Fl. Jap. 469 (1953).

Eastern Prov., between Kandai and Seprigal (July 28, 1955 S. K.).

Distr. Eurasia.

Polygonum (§ Aconogon) **nuristanicum** Kitamura in Acta Phytotax. Geobot. XVII: 141 (1958), **Fig. 48**.

Species *P. rumicifolio* affinis sed caule ramoso, foliis membranaceis acuminatis, stipulis pilosis differt. A *P. bucharico* foliis acuminatis differt.

Caulis circ. 1 m altus flexuosus ascendens glaber inferne 3.5–4.5 mm diametro, supra medium ramosus. Folia caulina inferiora sub anthesi emarcida, caulina media oblongo-lanceolata 13–14.5 cm longa 3.5–4 cm lata apice acuminata basi cuneata, petiolo exalato 5–6 mm longo, margine indivisa, supra viridia sparse pilosa, subtus pallida pilis adpressis dense sericea, textura tenuia, folia caulina superiora sursum gradatim minora oblongo-lanceolata vel ovato-oblonga demum lanceolata apice acuminata. Ochreae circ. 20 mm longae rubro-brunneae membranaceae pilosae. Paniculae ad apices caulis vel ramorum terminantes 5–7.5 cm longae pedunculatae in fructu strictae, rachidibus gracilibus angulatis glabris, bracteis 2.5 mm longis, pedicellis gracilibus glabris 2.5–3.5 mm longis apice dilatatis, solitariis vel geminatis. Corolla alba demum rubescens campanulata demum 5 mm longa et lata, 5-partita, laciniis obovatis utrinque glabris. Achenia perianthiis breviora brunnea late ovata triquetra 3.5 mm longa 3.5 mm lata laevia.

Nuristan: Between Pronz and Eschtaway (Aug. 5, 1955 S. K.)—fr., between Pushuki and Kushitaki (Aug. 4, 1955 S. K.)—fl.—Typus in Herb. Univ. Kyoto.

Distr. Afghanistan.



Fig. 48. *Polygonum nuristanicum* Kitam.: 1 Flower, 2 Tepal, 3 and 4 Bracts, 5 Panicle with fruits (Nuristan: Between Pronz and Eschtaway), 6 Part of Panicle with flowers, 7 Flower, 8 Achene, 9 Vertical section of Achene. (Nuriston: Between Pushuki and Kushitaki).

Polygonum (Avicularia) **oxanum** Kom., Fl. URSS V : 633, 722, Tab. XLIII-2 (1936).

Sarobi (June 16, 1955 S. K.), Mazarisharif (June 30, 1955 S. K.), between Pulikhumri and Haibak (June 27, 1955 S. K.).

Distr. Afghanistan, Central Asia, Iran.

Polygonum paronychioides C. A. Mey. ex Hohenacker in Bull. Soc. Nat. Mosc. IV : 336 (1838).—Boiss., F. O. IV : 1040 (1879).—Grigorjev, in Fl. URSS V : 604, Tab. XXXVIII-4 (1936).

Shishigar (June 10, 1955 S. K.), Lataband, Mullaomur (June 15, 1955 S. K.).

Distr. Caucasus, Central Asia, Iran, Afghanistan.

Polygonum (Avicularia) **patulum** M. B., Fl. Taur.-Cauc. I : 304 (1808).—Grigor. in Fl. URSS V : 629, Tab. XLIV-3 (1936).

Polygonum Bellardi β . *patulum* Meisn. in DC., Prodr. XIV : 99 (1854).—Aitch., J. L. S. XVIII : 90.

Distr. Europe, Caucasus, W. Siberia, Central Asia (common), Asia Minor, Arm.-Kurd., Iran, Afghanistan.

Polygonum (Persicaria) **Persicaria** L., Sp. Pl. 361 (1753).—Steward, l. c. 57 (1930).—Grigor. in Fl. URSS V : 651, Tab. XLV-9 (1936).

Kandahar, Arghandab (June 7, 1955 S. K.), Sarobi (June 16, 1955 S. K.), Pulikhumri (July 3, 1955 S. K.).

Distr. Eurasia.

Polygonum (Avicularia) **polycnemoides** Jaub. et Spach, Illustr. Pl. Or. II : 30, t. 120, 121 (1844).—Boiss., F. O. IV : 1033.—Grigor. in Fl. URSS V : 624, Tab. XLII-4 (1936).

Distr. Greece, Asia Minor, Caucasus, Central Asia, Mesopotamia, Iran, Afghanistan.

Polygonum (Aconogon) **rumicifolium** Royle ex Bab. in T. L. S. XIII : 112 (1841) non Pallas in Spreng., Syst. II : 255 (1825) pro syn.—Hooker f., F. B. I. V : 51.—Steward, l. c. 109 (1930).

Polygonum ramoso-spicatum Klotzsch in Bot. Reise Pr. Waldem. 136 t. 87 (1862).

Distr. Pakistan (Kuram), Himalaya : from Kashmir to Nepal, Tibet.

Polygonum (Bistorta) **viviparum** L., Sp. Pl. 360 (1753).—Hooker f., F. B. I. V : 31.—Steward, l. c. 32 (1930).—Grigor., l. c. 674, Tab. XLVII-3 (1936).

Nuristan : Between Pushuki and Kushitaki (Aug. 4, 1955 S. K.).

Distr. Eurasia in temperate and arctic regions.

Pteropryum Oliveri Jaub. et Spach, Ill. II : 9, t. 108 (1844).—Boiss., F. O. IV : 1002.

Pteropryum Griffithii Meisn. in DC., Prodr. XIV : 31 (1854).

Distr. Afghanistan, Iran.

Rheum Moocrofitianum Royle, Ill. Himal. Mount. 315, 318 (1839).—Hooker f., F. B. I. V : 56.—Aitch., J. L. S. XVIII : 91.

Distr. Afghanistan (Kuram), Pakistan, Himalayas.

Rheum ribes L., Sp. Pl. 372 (1753).—Jaub. et Spach, Ill. Or. V, t. 470 (1853-7).—Boiss. F. O. IV: 1003.—Aitch., J. L. S. XVIII: 91, T. L. S. n. III: 105.—Losins. in Fl. URSS V: 497, Tab. XXIV-4 (1936).

Distr. Caucasus, Arm.—Kurd., Iran, Afghanistan.

Rheum tataricum L. f., Suppl. 22 (1781).—Aitch., T. L. S. n. III: 106, pl. XLV (1888).—Losins. in Fl. URSS V: 489, Tab. XXVIII-11 (1936), in Flora et Syst. III: 105 (1936).

Distr. Afghanistan, Western Europe, Aralo-Kasp., Pribalx.

Rheum tibeticum Maxim. ex Hooker f., F. B. I. V: 56.—Wendelbo in Nytt Mag. Bot. I: 25 (1952). **Fig. 33.**

Nuristan: Shabul Gul (Aug. 6, 1955 S. K.).

Distr. Afghanistan, Kashmir.

Rumex acetosa L., Sp. Pl. 337 (1753).—Hooker f., F. B. I. V: 61.

Nuristan: Between Pushuki and Kushitaki (Aug. 4, 1955 S. K.), Eschtaway (Aug. 7, 1955 S. K.).

Distr. Eurasia.

Rumex chalepensis Miller, Dict. ed. 8 (1768).—Rech. f. in Candollea XII: 109 (1949).

Rumex obtusifolius Boiss. (non L.), F. O. IV: 1011 p. p.

Distr. Asia, Afghanistan (Kuram, Harirud-Valley).

Rumex conglomeratus Murr., Prodr. Stirp. Goett.: 52 (1770).—Losins. in Fl. URSS V 470 (1936).

Kandahar, Arghandab (June 7, 1955 S. K.).

Distr. Europe, North Africa, Asia Minor, Mesopotamia, Iran, Afghanistan, Syria-Daria, Pam.—Al.

Rumex crispus L., Sp. Pl. 335 (1753).—Rechinger f. in Candollea XII: 80 (1949).

Distr. Cosmopolitan.

Rumex dentatus L., Mant. alt. 226 (1771).

subsp. **Klotzschianus** (Meisn.) Rech. f. in Beih. Bot. Centralbl. XLIX, 2: 19 (1932) p. p., in Candollea XII: 119 (1949).

Rumex dentatus β. *pleiodon* Boiss., F. O. IV: 1013 p. p.

Kandahar (June 6, 1955 S. K.), between Bulola and Doab (June 25, 1955 S. K.).

Distr. China, India, Afghanistan, Pakistan: Guilistan (May 28, 1955 S. K.), Himalayas.

Rumex Griffithii Rech. f. in Candollea XII: 143 (1949).

R. chalepensis × *crispus* Rech. f. in Beih. Bot. Central. XLIX, 2: 112 (1932).

Distr. Iran, Afghanistan, Central Asia.

Rumex hastatus Don, Prodr. Fl. Nepal. 74 (1825).—Boiss., F. O. IV: 1015.—Hooker f., F. B. I. V: 60.—Rech. f. in Candollea XII: 22 (1949).

Eastern Prov : Kandai (July 27, 1955 S. K.), between Seprigal and Voma (July 29, 1955 S. K.).

Distr. Afghanistan, Pakistan through Himalayas to China.

Rumex nepalensis Spr., Syst. II : 159 (1825).—Boiss., F. O. IV : 1011.—Aitchison, J. L. S. XVIII : 91.—Rech. f. in Candollea XII : 112 (1949).—Kitamura in Acta Phytotax. Geobot. XVI : 194 (1956).

Nuristan : Chatrass (Aug. 2, 1955 S. K.), between Seprigal and Voma (July 29, 1955 S. K.).

Distr. Japan, China, Java, Himalayas, Nilghiri, Pakistan, Afghanistan, Iran, Syria, Anatolia, Southern Europe.

Rumex Patientia L., Sp. Pl. 33 (1753).

subsp. **orientalis** (Bernh.) Danser in Neederl. Kruidk. Arch. 1923 : 11 (1924).—Rechinger f. in Candollea XII : 72 (1949).

Rumex orientalis Bernh. ex Schult. f., Syst. VII : 1433 (1830).—Boiss., F. O. IV : 1009 (1879) p. p.—Aitch., J. L. S. XVIII : 91, T. L. S. n. III : 106.

Doab (June 24, 1955 S. K.). Nuristan : Chatrass (Aug. 3, 1955 S. K.).

Distr. Southeast Europe, Southwest Asia.

subsp. **tibeticus** Rech. f. in Candollea XII : 74 (1909).

Nuristan : Chatrass (Aug. 2, 1955 S. K.).

Distr. Tibet, Pakistan, Western Himalaya, Afghanistan.

Rumex Paulsenianus Rech. f. in Fedde, Rep. XXIX : 246 (1931), in Candollea XII : 67 (1949).—Losins. in Fl. URSS V : 466, Tab. XXVI-11 (1936).

Distr. Afghanistan, Pakistan, Central Asia, Tibet, Kashmir.

Rumex thjanshanicus Losinskaja in Fl. URSS V : 466, 716 (1936).—Rech. f. in Candollea XII : 68 (1949).

Pagman near Kabul 1800 m (July 15, 1955 S. K.).

Distr. Iran, Afghanistan, Tianshan.

Rumex vesicarius L., Sp. Pl. 336 (1753).—Rech. f. in Candollea XII : 36 (1949).

Sarobi (June 16, 1955 S. K.).

Distr. Afghanistan, Pakistan, Iran, Arabia, Greece, North Africa.

Chenopodiaceae

Aellenia auricula (Moq.) Ulbrich in Engler, Pflanzenf. 2 ed. 16 c : 567 (1934).—Iljin in Fl. URSS VI : 270 (1936).

var. **acutifolia** (Moq.) Ulbrich, l. c.

Salsola Auricula β . *acutifolia* Moq. ex Boiss. in Kotschy, Pl. Pers. austr. ed. Hohenacker 1845 n. 460, F. O. IV : 958.

S. decurrens J. et S., Ill. Tab. 138 (1844-6).

A. auricula sensu Iljin, l. c. Tab XII-7 (1936).

Pulikhumri (July 3, 1955 S. K.).

Distr. sp. Kara-Kum., Amu-Dar., Pam.-Al., Iran, Afghanistan, Pakistan.

Agriophyllum latifolium Fischer et Mey. in Bull. Soc. Nat. Mosc. XII: 170 (1839).—Boiss., F. O. IV: 929.—Aitch., T. L. S. n. III: 102.—Iljin in Fl. URSS VI: 161, Tab. VII-11 (1936).

Distr. Central Asia: Kyz.-Kum., Kara-Kum., Gorn.-Turkm., Amu-Dar., Pam.-Al., Pakistan.

Anabasis eriopoda (Schrenk) Benth. in Gen. Pl. III: 73 (1883).—Aitch., T. L. S. n. III: 104.—Iljin in Fl. URSS VI: 290, Tab. XV-1 (1936).

Distr. Central Asia: Aralo-Casp., Pribalx., Karakum., Kyz.-Kum., Amu-Dar., Tianshan, Afghanistan, Iran.

Anabasis macroptera Moq. in DC., Prodr. XIII, 2: 231 (1849).—Iljin in Fl. URSS VI: 296 (1936).

Distr. Afghanistan (Bamian), Tianshan.

Atriplex crassifolia C. A. Mey. in Ledeb., Ic. Fl. Ross. I: 11, t. 42 (1829).—Boiss., F. O. IV: 908.—Hooker f., F. B. I. V: 6.—Iljin in Fl. URSS VI: 88 (1936).

Distr. Irt., Alt., Aral.-Kasp., Pribalx., Afghanistan, Pakistan, Himalaya: Jumna, Kunawar.

Atriplex dimorphostegia Kar. et Kir. in Bull. Soc. Nat. Mosc. XV: 438 (1842).—Boiss., F. O. IV: 909.—Aitch., T. L. S. n. III: 101 (var.).—Iljin in Fl. URSS VI: 93, Tab. IV-6 (1936).

Distr. Aral.-Kasp., Pribalx., Kyz.-Kum., Kara-Kum., Amu-Dar., Syr-Dar., Dz.-Kashg., Iran, Afghanistan, Pakistan, Syria, Arabia, North Africa.

Atriplex Griffithii Moq. in DC., Prodr. XIII, 2: 102 (1849).—Boiss., F. O. IV: 916.

Distr. Afghanistan, Iran.

var. **Stocksii** Boiss., F. O. IV: 916.—Ulbrich in Pflanzenfam. 2 ed. 16c: 514 (1934).

Distr. Pakistan: Karachi (May 17, 1955 S. K.), Afghanistan (sec Ulbrich).

The fruiting bracts of plants from Karachi, are sessile not contracted into a short pedicel.

Atriplex hastatum L., Sp. Pl. 1053 (1953).

f. **salina** Wallr. sec Gren. et Godr., Fl. France III: 12 (1855).—Boiss., F. O. IV: 909.—Iljin in Fl. URSS VI: 91 (1936).

Kabul West (July 22, 1955 S. K.), Between Bulola and Doab (June 25, 1955 S. K.).

Distr. Europe, Siberia, Egypt, Asia Minor, Caucasus, Iran, Afghanistan, Central Asia, Dz.-Kashg., Mongolia.

Atriplex flabellum Bunge in Boiss., F. O. IV: 912 (1879).—Aitch., T. L. S. n. III: 101.—Iljin in Fl. URSS VI: 105, Tab. IV-4 (1936).

Between Pulikhumri and Doab (July 9, 1955 S. K.), between Pulikhumri and Haibak (June 27, 1955 S. K.).

Distr. Central Asia, Iran, Afghanistan, Dz.-Kashg.

Atriplex monea Bunge in Boiss., F. O. IV : 912 (1879).—Aitch., T. L. S. n. III : 101, Pl. 44.—Iljin in Fl. URSS VI : 106, Tab. IV-5 (1936).

Between Pulikhumri and Haibak (June 27, 1955 S. K.).

Distr. Iran, Afghanistan, Central Asia : Kara-Kum., Gorn.-Turkm., Amu-Dar., Syr-Dar., Pam.-Al.

Atriplex repens Roth, Sp. Pl. 377 (1821).—Hooker f., F. B. I. V : 7.

Atriplex Belangeri Boiss., F. O. IV : 913.

Obione Koenigii Moq. in DC., Prodr. XIII, 2 : 109. (1849).—Wight, Ic. t. 1790 (1852).

Bulola (June 25, 1955 S. K.).

Distr. Afghanistan, Iran, India.

The stem of our specimens is not prostrate, but ascending.

Atriplex rosea L., Sp. Pl. 2 ed. 1493 (1763).—Aitch., T. L. S. n. III : 101.—Hooker f., F. B. I. V : 7.—Ulbrich, l. c. 514 (1934).—Iljin in Fl. URSS VI : 94, Tab. IV, 3 (1936).

Distr. Europe, North Africa, Asia Minor, Afghanistan, Pakistan : Chaman (June 2, 1955 S. K.).

Beta vulgaris L., Sp. Pl. 222 (1753).—Reich., Ic. XXIV, t. 235 f. 1-5, 234 f. 1-7.—Aitch., J. L. S. XIX : 185.

Distr. Cult. in Afghanistan. A native of Europe, North Africa, Asia Minor, Mesopotamia.

Camphorosma monandrum Bunge ex Boiss., F. O. IV : 922 (1879).

Distr. Afghanistan (reg. Kabul).

Camphorosma polygamum Bunge ex Boiss., F. O. IV : 921 (1879).

Distr. Afghanistan, Pakistan.

Ceratocarpum arenarius L., Sp. Pl. 969 (1753).—Boiss., F. O. IV : 918.—Aitch., T. L. S. n. III : 101.—Ulbrich in Pflanzenfam. 2 ed. 16c : 525, Fig. 196-L-P (1934).—Iljin in Fl. URSS VI : 110 (1936).

Kabul, Tomb of Baber (July 14, 1955 S. K.).

Distr. Rumania, Makedonia, Southern Russia, Caucasus, Siberia : Berx.-Tob., Irt., Alt., Ang.-Sajan., Central Asia : Aral.-Kasp., Pribalx., Iran, Afghanistan, Pakistan : Quetta (May 31, 1955 S. K.).

The leaves of our specimens are narrow 1-3 mm, usually 2 mm broad, 15-32 mm long.

Bassia eriophora (Schrader) Aschers. in Schweinf., Beitr. Fl. Aet. 187 (1867).—Ulbrich in Pflanzenfam. 2 ed. 16 c : 531 (1934).

Chenolea eriophora (Moq.) Aitch. et Hemsl. in T. L. S. n. III : 102.

Kochia latifolia Fresen., Beitr. 179 (1833).—Boiss., F. O. IV : 927.

Echinopsilon eriophorus Moq. in DC., Prodr. XIII 2 : 135. (1849).

Distr. Egypt, Arabia, Sinai, Palestine, Mesopotamia, Syria, Iran, Afghanistan,

Pakistan.

The writer here enumerates *B. eriophora* according to Aitchison and Hemsley.

Bassia hyssopifolia (Pall.) Volkans in Pflanzenfam. III 1a: 70 (1892).—Paulsen, Pl. Olufsen's Pamir Exped. 190 (1903).—Ulbrich, l. c. 531 (1934).

Distr. Europe, Caucasus, Siberia, Asia Minor, Arm.—Kurd., Iran, Afghanistan, Dz.—Kashg., Mongolia.

Chenopodium album L., Sp. Pl. 219 (1753).—Aitch., J. L. S. XVIII: 89.

Between Mazarisharif and Haibak (July 1, 1955 S. K.), Kandahar (June 8, 1955 S. K.), Kabul (July 18, 1955 S. K.), between Kandai and Seprigal (July 28, 1955 S. K.).

The Afghan plants smell always very bad, while Japanese and North American plants do not smell so.

var. **candicans** (Moq.) in DC., Prodr. XIII, 2: 71 (1849).—Aitch., J. L. S. XVIII: 89.

Sarobi (June 16, 1955 S. K.).

Distr. sp. Cosmopolitan.

Chenopodium ambrosioides L., Sp. Pl. 219 (1753).—Boiss., F. O. IV: 904.

Distr. Cosmopolitan weed. A native of tropical South America.

Chenopodium Botrys L., Sp. Pl. 219 (1753).—Boiss., F. O. IV: 903.—Aitch., J. L. S. XVIII: 89, T. L. S. n. III: 100.—Paulsen, Pl. Olufsen's Pamir Exped. 186 (1903).

Nuristan: Seprigal (Aug. 13, 1955 S. K.), Sarobi (June 15, 1955 S. K.).

Distr. Eurasia, Africa, North America.

Chenopodium foliosum (Moench) Aschers., Prodr. Fl. Brand. I: 572 (1864).—Iljin, Fl. URSS VI: 48, Tab. 111-3 (1936).

Chenopodium virgatum (L.) Jessen (non Thunb.), Deutsch. exc. fl. 300 (1879).—Hegi, Ill. Fl. III: 231, Taf. 95, Fig. 4 (1912).

Blitum virgatum L., Sp. Pl. 4 (1753).—Boiss., F. O. IV: 905.—Aitch., J. L. S. XVIII: 90.

Chenopodium Blitum Hooker f., F. B. I. V: 5 (1886).—Aitch., T. L. S. n. III: 100.

Distr. Europe, North Africa, Caucasus, Siberia, Central Asia, Asia Minor, Iran, Afghanistan, Himalaya, Kashmir, Tibet, Mong., Dz.—Kashg.

Chenopodium glaucum L., Sp. Pl. 52 (1753).—Boiss., F. O. IV: 903.

Distr. Europe, Caucasus, Central Asia, Siberia, Afghanistan, Himalayas.

Chenopodium murale L., Sp. Pl. 219 (1753).—Boiss., F. O. IV: 902.—Aitch., J. L. S. XVIII: 90.—Iljin in Fl. URSS VI: 55, Tab. III-7 (1936).

Sarobi (June 18, 1955 S. K.).

Distr. Cosmopolitan weed.

Chenopodium rubrum L., Sp. Pl. 218 (1753).—Iljin in Fl. URSS VI: 53.

Kabul, West (July 22, 1955 S. K.).

Distr. Europe, Caucasus, Asia Minor, Central Asia, Siberia, Dzung.-Kash., Mongolia.

Chenopodium vulvaria L., Sp. Pl. 220 (1753).—Hegi, Ill. Fl. III: 221, Tab. 95-3 (1912).—Iljin in Fl. URSS VI: 67.

Distr. Europe, Caucasus, Asia Minor, Central Asia, Iran: Tabriz (July 28, 1955 K. Yamashita), Pakistan: Chaman (June 2, 1955 S. K.), Quetta (May 27, 1955 S. K.).

Corispermum Lehmanianum Bunge in Reliq. Lehm. 458 (1851).—Aitch., T. L. S. n. III: 101.—Iljin in Fl. URSS VI: 152, Tab. VI-6 (1936).

Distr. Iran, Kashg., Afghanistan, Central Asia.

Cornulacha monachanta Del., Fl. Aegypt. 206 (1824).—Boiss., F. O. IV: 984.—Ulbrich in Pflanzenfam. 2 ed. 16 c: 583, Fig. 224A-D (1934).

Distr. North Africa, Arabia, Palestine, Mesopotamia, Iran, Afghanistan (W).

Eurotia ceratoides C. A. Mey. in Ledeb., Fl. Alt. IV: 239 (1833).—Aitch., T. L. S. n. III: 101.—Iljin in Fl. URSS VI: 108, Tab. XI-12 (1936).—Paulsen, Pl. Olufsen's Pamir Exped. 187 (1903).

Eurotia ceratoides β . *ferruginea* Boiss., F. O. IV: 918.

Distr. Europe, Caucasus, Asia Minor, Iran, Afghanistan, Central Asia, Siberia, Mongolia, North China, Pakistan: Karakoram, Skardu (Aug. 5, 1955 S. Nakao), along Biafo-Lunga (July 19, S. Nakao), Himalayas.

Gamanthus commixtus Bunge in Mém. Acad. Pétersb. Sér. VI, IV: 76 (1862).—Boiss., F. O. IV: 980.

Doab (July 10, 1955 S. K.).

Distr. Afghanistan.

Gamanthus gymnocarpus (Moq.) Bunge, l. c. 77, t. 1 f. 14 (1862).—Boiss., F. O. IV: 980.—Iljin in Fl. URSS VI: 347 (1936).

Distr. Afghanistan, Iran: Between Damagan and Teheran (July 11, 1955 K. Yamashita), between Selazewar and Damagan (July 11, 1955 K. Yamashita), Central Asia.

Girgensohnia oppositiflora (Pall.) Fenzl. in Ledeb., Fl. Ross. III, 2: 835 (1851).—Boiss., F. O. IV: 967.—Aitch., T. L. S. n. III: 104.—Iljin in Fl. URSS VI: 277, Tab. XIV-2 (1936).

Anabasis heteroptera Jaub. et Sp., Ill. Or. II, t. 133 (1844-6).

Between Pulikhumri and Haibak (June 27, 1955 S. K.), Pulikhumri (July 3, 1955 S. K.).

Distr. Mesopotamia, Iran, Afghanistan, Aralo-Casp., Central Asia, Dz.-Kashg.

Halarchon vesiculosus (Moq.) Bunge in Mém. Acad. St. Pétersb. 7 sér. IV. II: 75 (1862) t. 1.—Boiss., F. O. IV: 979.—Ulbrich in Pflanz.-fam. 2 ed. 16c: 582, Fig. 222-J, K. (1934).

15 km east from Kandahar (June 6, 1955 S. K.).

Distr. Afghanistan.

Our plants are usually dwarf, 3–5 cm high, not 30 cm high as described in the original description. The flowers are very beautiful, and light purple in colour. The plants were forming large pure associations, and looked like purple carpets covering the desert. The connective of the anther enlarged like a petal.

Halimocremis mollissima Bunge in Mém. Acad. St. Pétersb. 7 sér. IV, II: 71, tab. 1, fig. 10 (1862).—Boiss., F. O. IV: 977.—Aitch., T. L. S. n. III: 104.—Iljin in Fl. URSS VI: 334 (1936).

Distr. Central Asia: Kyz.-Kum., Kara-Kum., Gorn.-Turkm., Syt-Dar., Amu-Dar., Iran, Afghanistan.

Halocharis afghanica Iljin in Not. Syst. Herb. Kom. XI: 80 (1949).

Distr. Afghanistan.

Halocharis clavata Bunge in Mém. Acad. St. Pétersb. 7 sér. IV, II: 64, Tab. 1–4 (1862).—Boiss., F. O. IV: 976.

Distr. Afghanistan.

Halocharis hispida Bunge in Mém. Acad. St. Pétersb. 7 sér. IV, II: 62, Tab. 1, fig. 1 (1862).—Boiss., F. O. IV: 975.—Iljin in Fl. URSS VI: 327, Tab. XIV, 7a–b (1936).

Pulikhumri (July 3, 1955 S. K.).

Distr. Central Asia (commonly distributed), Iran, Afghanistan.

Halocharis lachnantha Eug. Kor. in Fl. URSS VI: 880 (1936).

var. **macrantha** Iljin in Not. Syst. Herb. Kom. XI: 81 (1949).

Distr. sp. Afghanistan (var.), Central Asia.

Halocharis sulphurea Bunge, l. c. 63, Tab. 1–2 (1862).—Boiss., F. O. IV: 975.—Aitch., T. L. S. n. III: 104.—Ulbrich in Pflanzenfam. 2 ed. 16c: 580, Fig. 222 A–D (1934).

Distr. Mesopotamia, Iran, Afghanistan.

Halocharis turcomanica Iljin in Acta Inst. Bot. Ac. Sc. URSS ser. 2, II: 129 (1936), in Fl. URSS VI: 328 (1936).

Distr. Kara-Kum., Afghanistan (probably according to Iljin).

Halocharis violacea Bunge, l. c. 63, Tab. 1–3 (1862).—Boiss., F. O. IV: 975.—Hooker f., F. B. I. V: 19.

15 km east from Kandahar (June 6, 1955 S. K.), Kabul (July 22, 1955 S. K.).

Distr. Iran, Afghanistan, Pakistan.

Halocnemum strobilaceum (Pall.) M. B., Fl. Taur.-Cauc. III: 3 (1819).—Boiss., F. O. IV: 936.—Ulbrich in Pflanzenfam. 2 ed. 16c: 546, Fig. 171, 204 A–G. (1934).—Iljin in Fl. URSS VI: 171, Tab. 8, 4a–d (1936).—Linch. in Kew Bull. 1949: 191.

Distr. Europe, Caucasus, W. Siberia, Asia Minor, Iran, Central Asia, Afghanistan

(probably accord. Linch.).

Halogeton glomeratus (M. B.) C. A. Mey. in Ledeb., Fl. Alt. I: 378 (1829).—Fl. Ross. t. 40 (1829).—Boiss., F. O. IV: 985.—Hooker f., F. B. I. V: 20.—Iljin in Fl. URSS VI: 351, Tab. XIV, 6 (1936).

Distr. E. Europe, W. Siberia, Central Asia (common), Dzung.-Kashg., Mongolia, Afghanistan (Bamian).

Halostachys caspica (M. B.) C. A. Mey. in Bull. Soc. Nat. Mosc. XI: 361 (1838).—Boiss., F. O. IV: 935.—Aitch., T. L. S. n. III: 102.—Iljin in Fl. URSS VI: 169, Tab. VIII-3 (1936).

Halostachys Belangeriana (Moq.) Botsch. in Not. Syst. Kom. XVI: 84 (1954).

Distr. E. Europe, Caucasus, Central Asia, Iran, Afghanistan, Dz.-Kashg., Mongolia.

Halotis pilosa (Moq.) Iljin in Acta Inst. Bot. Acad. Sc. URSS ser. 1, III (1936), in Fl. URSS VI: 339, Tab. XVII-1 a, b (1936).

Halimocremis pilosa Moq., Chenop. 152 (1840).—Boiss., F. O. IV: 976.—Aitch., T. L. S. n. III: 104.—Ulbrich in Pflanzenfam. 2 ed. 16c: 581, Fig. 222 E, F. (1934).

Distr. Central Asia: Kyz.-Kum., Kara-Kum., Gorn.-Turkm., Iran, Afghanistan (W).

Haloxylon aphyllum (Minkw.) Iljin in Journ. Bot. de l'URSS XIX, 2: 171 (1934), in Fl. URSS VI: 312, Tab. X-10 (1936).

Distr. Iran: Between Damagan and Teheran (July 12, 1955 K. Yamashita), Afghanistan, Central Asia (common).

Haloxylon persicum Bunge ex Boiss. et Buhse in Nouv. Mém. Soc. Nat. Mosc. XII: 189 (1860).—Ulbrich in Pflanzenfam. 2 ed. 16c: 572, Fig. 215 A-G, 216 (1934).—Iljin in Fl. URSS VI: 311, Tab. X-9 (1936).

Haloxylon Ammodendron Boiss. (non Bunge), F. O. IV: 948 p. p.—Aitch., T. L. S. n. III: 102.

Distr. Iran, Central Asia: Aral.-Kasp., Pribalx., Kyz.-Kum., Kara-Kum., Syr-Dar., Amu-Dar., Afghanistan, Dz.-Kashg.

Haloxylon multiflorum (Moq.) Bunge ex Boiss., F. O. IV: 949.—Ulbrich, 1. c. (1934).

Between Bulola and Doab (June 25, 1955 S. K.).

Distr. Afghanistan.

Haloxylon salicornicum (Moq.) Bunge ex Boiss., F. O. IV: 949.—Aitch., T. L. S. n. III: 103.—Hooker f., F. B. I. V: 16.—Ulbrich, 1. c. 572 (1934).

Doab (July 10, 1955 S. K.).

Distr. North Africa, Iran, Afghanistan, Pakistan: Chaman (June 2, 1955 S. K.), Quetta (May 26, 1955 S. K.).

A common plant in desert.

Hammada Griffithii (Moq.) Iljin in Bot. Journ. XXXIII: 583 (1948).

Arthrophytum Griffithii (Moq.) Ulbrich in Pflanzenfam. 2 ed. 16c: 570.—Linch. in Kew Bull. 1949: 188.

Haloxylon Griffithii Boiss., F. O. IV: 950.—Aitch., T. L. S. n. III: 102.

Distr. Afghanistan, Pakistan.

Hammada leptoclada (M. Pop.) Iljin in Bot. Journ. XXXIII: 582 (1948).

Arthrophytum leptocladum M. Pop. ex Iljin in Journ. Bot. de l'USSR XIX, 2: 171 (1934) nomen, in Fl. URSS VI: 308, 879 (1936).—Linchevsky and Prozorovsky in Kew Bull. 1949: 190.

Distr. Amu-Dar., Pam.-Al., Afghanistan (probably by Iljin and Linch.).

Hammada wakhanica (Pauls.) Iljin in Bot. Journ. XXIII: 583 (1948).

Arthrophytum wakhanicum (Pauls.) Eug. Kor. in Herb. Inst. Bot. Ac. Sc. URSS. ex Iljin Journ. Bot. de l'USSR XIX, 2: 171 (1934), in Fl. URSS VI: 308 (1936).—Linc. in Kew Bull. 1949: 189.

Anabasis wakhanica Paulsen, Pl. Olufsen's Pamir Exped. 201 (1963).

Distr. Pam.-Al., Afghanistan (Wakhan).

Kalidium caspicum (L.) Ung.-Sternb. in Atti Congr. B. Firenze 1874: 317 (1876).—Iljin in Fl. URSS VI: 167 (1936).—Linch. et Pod. in Kew Bull. 1949: 191.

Distr. E. Europe, Caucasus, Central Asia (common), Iran, Afghanistan (probably acc. Lin. et Pod.).

Kirilowia eriantha Bunge, Del. Sem. Hort. Dorp. 7 (1843).—Boiss., F. O. IV: 920.—Ulbrich in Pflanzenfam. 2 ed. 16c: 528, Fig. 198 J-N (1934).—Iljin in Fl. URSS VI: 123, Tab. V-4 (1936).

Distr. Central Asia: Aral.-Kasp., Pribalx., Dz.-Tarb., Kyz.-Kum., Kara-Kum., Syr-Dar., Tianshan, Dz.-Kashg., Afghanistan.

The writer can not see Afghan specimen, Griff. n. 1758, reported as *K. eriantha* by Boiss.

Kirilowia villosa (Moq.) Benth. et Hooker f., Gen. Pl. III: 57 (1880).—Ulbrich in Pflanzenfam. 2 ed. 16c: 528 (1934).

Axyris villosa Moq. in DC., Prodr. XIII, 2: 117 (1849).

Distr. Afghanistan (collected by Griffith).

Kochia indica Wight, Ic. t. 1791 (1852).—Hooker f., F. B. I. V: 11.

Kochia Griffithii Bunge ex Boiss., F. O. IV: 924 (1879).

Distr. Afghanistan (Reg. Kabul), Pakistan, India.

Kochia iranica (Hausskn. et Bornm.) Litw. ex Bornm. in Bull. Herb. Boiss. 2 sér. VIII: 546 (1908).—Iljin, l. c. 131, Tab. V-12 (1936).

Kochia iranica (non) Boiss., F. O. IV: 924 p.p.

Between Bulola and Doab (June 25, 1955 S. K.).

Distr. Caucasus Iran, Afghanistan, Central Asia Dz.-Kashg.

Kochia Scoparia (L.) Schrad. in Neues Journ. III, 3, 4: 85 (1809).—Boiss., F.

O. IV : 925.—Aitch., T. L. S. n. III : 102.—Iljin in Fl. URSS VI : 133, Tab. V-9 (1936).

Distr. Eurasia in warm temperate reg. Iran : Tabriz (July 28, 1955 K. Yamashita).

Londesia eriantha Fischer et Mey., Ind. Sem. Horti Petrop. II : 40 (1835).—Iljin in Fl. URSS VI : 124, Tab. V-14 (1936).

Between Bulola and Doab (June 25, 1955 S. K.).

Distr. Aralo-Kasp., Pribalx., Kyz.-Kum., Kara-Kum., Gorn.-Turkm., Dz.-Kashg., Afghanistan.

The fruits depressed globose. The achene horizontal. Style branches 2-3.

Noaea Griffithii Bunge in Mém. Acad. Pétersb. 7 sér. IV, II : 22 (1862).—Boiss., F. O. IV : 966.

Distr. Afghanistan.

Noaea major Bunge, 1. c. 27 (1862).—Boiss., 1. c.

Distr. Afghanistan.

Noaea mucronata (Forsk.) Asch. et Schweinf., Ill. Fl. Egypt II : 131 (1887).—Ulbrich in Pflanzenfam. 2 ed. 16 c : 574, Fig. 217, E-K (1934).—Iljin in Fl. URSS VI : 266, Tab. XIII-7 (1936).

Noaea spinosissima Moq. in DC., Prodr. XIII, 2 : 209 (1849).—Boiss., F. O. IV : 266.—Aitch., T. L. S. n. III : 103.

Distr. Caucasus, Gorn.-Turkm., Pam.-Al., Greece, Egypt, Asia Minor, Arm.-Kurd., Iran, Afghanistan.

Pandertia pilosa F. et Mey., Index Sem. Horti Petrop. II : 46 (1835).—Boiss., F. O. IV : 919.—Ulbrich in Pflanzenfam. 2 ed. 16c : 528, Fig. 198 E-H (1934).—Iljin in Fl. URSS VI : 120.

Kabul, Dal-ul-Aman (July 18, 1955 S. K.), between Pulikhumri and Doab (July 9, 1955 S. K.), Kabul, West (July 22, 1955 S. K.), between Bulola and Doab (June 25, 1955 S. K.).

Distr. Iran : Tabriz (July 28, 1855 K. Yamashita), Caucasus, Asia Minor, Arm.-Kurd.

Salsola arbuscula Pallas, It. I, app. 488, t. G, f. 1 (1771), Illust. 25, t. 17 (1803).—Aitch., T. L. S. n. III : 103.—Iljin in Fl. URSS VI : 237, Tab. XI-9 (1936).

Distr. E. Europe, Central Asia (common), Iran, Afghanistan.

Salsola aurantiaca Bunge ex Boiss., F. O. IV : 963 (1872).

Distr. Iran, Afghanistan.

Salsola carinata C. A. Mey. in Eichw., Pl. Casp.-Cauc. 36 (1831-3).—Boiss., F. O. IV : 955.—Iljin in Fl. URSS VI : 257, Tab. XI-15 (1936).

Distr. Central Asia (common), Iran, Afghanistan.

Salsola crassa M. B. in Mém. Soc. Nat. Mosc. I : 100 (1806).—Iljin in Fl. URSS VI : 226, Tab. XI-7 (1936).—Linc. et Proz. in Kew Bull. 1949 : 193.

Distr. E. Europe, Caucasus, Central Asia, Arm.-Kurd., Afghanistan (probably sec. Linc.).

Salsola dendroides Pallas, Illustr. 22, t. 14 (1803).—Iljin in Fl. URSS VI: 255 (1936).

Salsola verrucosa M. Bieb. in Mém. Soc. Nat. Mosc. I: 103 (1811).—Hooker f., F. B. I. V: 18.

Distr. E. Europe, Caucasus, Central Asia (common), Arm.-Kurd., Iran, Pakistan. Not yet recorded from Afghanistan.

Salsola foetida Del., Fl. Egypt. Ill. 57 (1813).—Boiss., F. O. IV: 961.—Hooker f., F. B. I. V: 18.—Aitch., T. L. S. n. III: 103.

S. spinescens Wight, Ic. V t. 1796 (1852).

Between Pulikhumri and Doab (July 19, 1955 S. K.).

Distr. Pakistan: Karachi (May 19, 1955 S. K.), India, North Africa, Arabia, Iran, Afghanistan.

Salsola hispidula Bunge in Acta Horti Petrop. VI, 2: 437 (1880).—Boiss., F. O. IV: 960.—Iljin in Fl. URSS VI: 247.

Distr. Central Asia (common), Iran, Afghanistan (Reg. Kabul).

Salsola incanescens C. A. Mey. in Eichw., Pl. Casp.-Cauc.: 35, t. 26 (1831-3).—Iljin in Fl. URSS VI: 254 (1936).

S. spissa Boiss., F. O. IV: 954.

Distr. Caucasus, Central Asia (common), Iran, Afghanistan.

Salsola Paulsenii Litw. in Izv. Turkest. Otd. Russk. Geogr. Obshch. IV, 5: 28 (1905).—Iljin in Fl. URSS VI: 216 (1936).—Linc. et Proz. in Kew Bull. 1949: 192.

Salsola Kali (non L.) Boiss., F. O. IV: 954. p. p.—Aitch., T. L. S. n. III: 103.—Paulsen, Pl. Olufsen's Pamir Exped. 195 (1903).

Sarobi (June 18, 1955 S. K.), Kabul, Tomb of Ex-King (July 18, 1955 S. K.).

Distr. E. Europe, Caucasus, Central Asia (common), Afghanistan.

Salsola Richterii Karel. ex Moq. in DC., Prodr. XIII, 2: 185 (1849).—Iljin in Fl. URSS VI: 242, Tab. XII-11 (1936).—Linc. et Proz. in Kew Bull. 1949: 195.

Distr. Central Asia, Iran, Afghanistan (probably according to Linc. and Proz.).

Salsola sclerantha C. A. Mey. in Eichw., Pl. Casp.-Cauc. 35, t. 27 (1831-3).—Iljin in Fl. URSS VI: 257, Tab. XI-14.—Linc. et Proz. in Kew Bull. 1949: 195.

Distr. Central Asia (common), Iran, Afghanistan (probably accord. to Linc. and Proz.).

Salsola subaphylla C. A. Mey. in Eichw., Pl. Casp.-Cauc.: 34, t. 24 (1831-4).—Boiss., F. O. IV: 959.—Iljin in Fl. URSS VI: 245, Tab. XI-13 (1936).

Distr. Central Asia (common), Iran, Afghanistan.

Salsola turcomanica Litw. in Sched. ad Herb. Fl. Ross. II: 10 (1900).—Iljin in Fl. URSS VI: 234 (1936).—Linc. et Proz. in Kew Bull. 1949: 193.

S. ferganica Drov. in Trav. Mus. Bot. Acad. Sc. Pétersb. XVI: 141, t. 16, f. 1 (1916).

Distr. E. Europe, Central Asia (common), Iran, Afghanistan (probably according to Linc. et Proz.).

Spinacia turkestanica Iljin in Sorn. Rast. USSR II: 113 (1934), in Acta Inst. Bot. Ac. Sc. URSS, ser. 1, II: 123 (1936), in Fl. URSS VI: 76, Tab. XI-9 (1936).—Ulbrich in Pflanzenfam. 2 ed. 16c: 502 (1934).

Spinacia tetrandra Boiss. (non Stev.) F. O. IV: 906 p. p.

Spinacia oleracea Aitch. (non L.), T. L. S. n. III: 101.—native name Spinaj.

Distr. Central Asia: Pribalx., Kara-Kum., Gorn.-Turkm., Syr-Dar., Iran, Afghanistan (W).

Spinacia oleracea L., Sp. Pl. 1027 (1753).—Ulbrich in Pflanzenfam. 2 ed. 16c: 502 (1934).

Distr. Cultivated plant. A native of Armenia and Iran. Both round and spinous seeds of Spinach were bought in Kandahar and Mazarisharif.

The native names are Palak and Subzipalak.

Suaeda arcuata Bunge in Mém. Sav. Étrang. VII: 461 (1851).—Boiss., F. O. V: 943.—Iljin, l. c. 182 (1936).

Distr. Central Asia, Iran, Afghanistan (Wakhan).

Suaeda fruticosa (L.) Forsk., Fl. Aeg. Arab. 70 (1775).—Boiss., F. O. IV: 939.—Hooker f., F. B. I. V: 13.—Aitch., T. L. S. n. III: 102.—Ulbrich in Pflanzenfam. 2 ed. 16c: 556.

Distr. Pakistan: Karachi near Japanese Embassy (May 20, 1955 S. K.), India, Afghanistan, Asia Minor, Europe, North Africa.

Suaeda heterophylla (Kar. et Kir.) Bunge in Acta Horti Petrop. VI, 2: 429 (1880).—Boiss., F. O. IV: 943.—Iljin in Fl. URSS VI: 197, Tab. IX-5 (1936).

Between Pulikhumri and Doab (July 8, 1955 S. K.), Kabul, west side (July 22, 1955 S. K.).

Distr. Afghanistan, E. Europe, Caucasus, Central Asia (common), Dz.-Kashg., Mong., Tibet.

Suaeda microphylla Pallas, Illustr. 52, t. 44 (1803).—Boiss., F. O. IV: 938.—Iljin in Fl. URSS VI: 179 (1936).—Linc. et Proz. in Kew Bull. 1949: 191.

Distr. Caucasus, Central Asia (common), Arm.-Kurd., Iran, Dz.-Kashg., Afghanistan (probably according to Linc. and Proz.).

Suaeda salsa (L.) Pallas, Illustr. 46, t. 39 (1803).—Boiss., F. O. IV: 942.—Aitch., T. L. S. n. III: 102.—Iljin in Fl. URSS VI: 191, Tab. IX, 8 (1936).

Suaeda maritima Hooker f. (non Dumort.), F. B. I. V: 14 p. p.

Suaeda maritima var. *salsa* (Pall.) G. Beck. in Hegi, Ill. Fl. III: 258, fig. 557r (1912).

Kandahar (June 8, 1955 S. K.), Doab (July 10, 1955 S. K.), Kabul, westside

(July 22, 1955 S. K.).

Distr. Europe, Caucasus, Central Asia, Afghanistan, Pakistan.

The leaves are obtuse, becoming black when dried.

Amaranthaceae

Aerva persica (Burm. f.) Merrill in Philip. Journ. Sci. XIX: 348 (1921).—Schinz in Pflanzenfam. 2 ed. 16c: 51 (1934).

Iresine persica Burm. f., Fl. Ind. 212, t. 65, fig. 1 (1768).

Aerva javanica Juss. in Ann. Mus. XI: 131 (1808).—Hooker f., F. B. I. V: 727.—Aitch., J. L. S. XIX: 185.

β. **Bovei** Webb. ex Boiss., F. O. IV: 993.

Sarobi (June 16, 1955 S. K.).—Leaves linear.

Distr. sp. Africa, Arabia, Iran, Afghanistan, Pakistan, India, Malaya.

Achyranthus asper L., Sp. Pl. 204 (1753).

var. **nuristanica** Kitamura var. nov.

Folia elliptico-oblonga apice acuminata utrinque sparse pubescentia. Bracteolae ovatae integrae. Staminodia filamentis multobreviora, fornicata, margine subintegra, dorso in lamellum brevem eroso-dentatum (nec profunde laciniatum).

Nuristan: Between Pushuki and Kushimaicot (Aug. 9, 1955 S. K.).—Typus in Herb. Univ. Kyoto, between Voma and Trokikorl (July 31, 1955 S. K.).

Distr. sp. Tropical Asia, Africa, Australia and America.

Amaranthus blitum L., Sp. Pl. 990 (1753).—Aitch., J. L. S. XVIII: 89.—Vassil. in Fl. URSS VI: 364, Tab. XVIII, 8a, b.

Amaranthus sylvestris Desf., Cat. Hort. Paris ex Lois., Not. Fl. Fr. 140 (1810).—Boiss., F. O. IV: 990.—Hegi, Ill. Fl. III: 265, Fig. 560-f, g. (1912).

Kunduz (July 6, 1955 S. K.).

Distr. Europe, North Africa, Caucasus, Central Asia (common), Asia Minor, Iran, Afghanistan, India, Central America.

Amaranthus caudatus L., Sp. Pl. 990 (1753).—Boiss., F. O. IV: 992.—Hooker f., F. B. I. IV: 719.—Vassil. in Fl. URSS VI: 360, Tab. XVIII-2a, b. (1936).

Distr. Pakistan, Central Asia (common), Tibet, India, Himalaya, Caucasus, Europe, Asia Minor, Africa, North and South America. A native of tropical America.

Amaranthus paniculatus L., Sp. Pl. ed. 2, 1406 (1763).—Boiss., F. O. IV: 989.—Hooker f., F. B. I. IV: 718.—Aitch., T. L. S. n. III: 100.—Vassil. in Fl. URSS VI: 361, Tab. XVIII, 5 a-c (1936).

Distr. A native of America, now widely cultivated or an escape in the warm regions.

Amaranthus retroflexis L., Sp. Pl. 991 (1753).—Boiss., F. O. IV: 989.—Thellung in Hegi, Ill. Fl. III: 264, T. 97-5 (1912).—Vassil., l. c. 362, Tab. XVIII -5, a-c (1936).

Kunduz (July 6, 1955 S. K.).

Distr. A native of America widely naturalized in the world.

Celosia argentea L., Sp. Pl. 297 (1753).—Boiss., F. O. IV : 987.—Aitch., J. L. S. XIX : 185.—Vassil., l. c. 355, Tab. XVIII-1, e (1936).

Distr. A pantropic weed.

Digera alternifolia (L.) Aschers. in Schweinf., Beitr. Fl. Aethiop. 180 (1867).—Boiss., F. O. IV : 984.—Schinz in Pflanzenfam. 2 ed. 16 c : 40 (1934).

Digera arvensis Forsk., Fl. Aeg. Arab. 65 (1775).—Hooker f., F. B. I. IV : 717.

Desmochete muricata Wight, Ic. t. 732.

Jalalabad (June 17, 1955 S. K.).

Distr. Malaya, India, Pakistan, Afghanistan, Arabia, Africa

Nyctaginaceae

Boerhaavia diffusa L., Sp. Pl. 3 (1753).—Aitch., J. L. S. XIX : 184.—Heimerl in Pflanzenfam. 2 ed. 16c : 119 (1934). Rheede Hort. Mal. VII, t. 56.

Boerhaavia repens L. var. *diffusa* (L.) Boiss., F. O. IV : 1045.—Hooker f., F. B. I. IV : 709.

Distr. Pantropic.

Bougainvillea spectabilis Willd., Sp. Pl. II : 348 (1799).—Bornm. in Engler, Bot. Jahrb. LXVI : 243 (1934).

Distr. A native of Brasil, cultivated widely in tropical and subtropical regions.

Aizoaceae

Gisekia pharnaceoides L., Mant. II : 562 (1771) ut *Gisechia* p.—Boiss., F. O. IV : 896.—Clarke in F. B. I. II : 664.—Pax and Hoffm. in Pflanzenfam. 2 ed. 16c : 192 (1934). Wight, Ic. 1167, 1168. Kirtikar and Basu, Ind. Med. Pl. Plate 475.

Distr. Africa, Arabia, Afghanistan, Pakistan, India, Ava.

Origia decumbens Forsk., Fl. Aeg. Arab. 103 (1775).—Clarke, F. B. I. II : 661.—Aitch., J. L. S. XVIII : 163.—Engler, Pflanzenwelt Afr. III, I : 143, Fig. 92 (1915).

Distr. India, Pakistan (Kuram), Africa.

Trianthema pentandra L., Mant. 79 (1767).—Boiss., F. O. II : 766.—Clarke, F. B. I. II : 660.—Kirtikar and Basu, Ind. Med. Pl. Pl. 471.

Distr. Pakistan, Afghanistan, Iran, Africa.

Portulacaceae

Portulaca oleracea L., Sp. Pl. 445 (1753).—Boiss., F. O. I : 757.—Edgew. and Hooker f., F. B. I. I : 264.—Aitch., J. L. S. XVIII : 38.

Distr. A cosmopolitan weed.

In Quetta, *P. oleracea* was sold at a market.

Caryophyllaceae by M. Mizushima

Acanthophyllum aphananthum Rech. f. in Österr. Bot. Zeitsch. 104 : 174 (1957).
Distr. Afghanistan : Lal-i-Zarjangan.

Acanthophyllum fissicalyx Rech. f. in Österr. Bot. Zeitsch. 104 : 174 (1957).
Distr. Afghanistan : Pirzada near Kandahar.

Acanthophyllum grandiflorum Stocks in Hook. Journ. Bot. IV : 142 (1852).
—Boiss., F. O. I : 561.—Gilli in Fedde, Rep. Bd. LIX : 166 (1956).

Acanthophyllum macrodon Edgew. in Hook. f., F. B. I. I : 216 (1874).
Distr. Afghanistan, Pakistan.

Acanthophyllum heterophyllum Rech. f., l. c. 173 (1957).
Distr. Afghanistan : Pirzada near Kandahar.

Acanthophyllum kandaharicum Gilli, l. c. 168 (1956).
Distr. Afghanistan.

Acanthophyllum pachystegium Rech. f., l. c. 173 (1957).
Distr. Afghanistan : Khash Distr.

Acanthophyllum polyrhaphium Rech. f., l. c. 173 (1957).
Distr. Afghanistan : Faizabad.

Acanthophyllum sordidum Bunge ex Boiss., F. O. I : 565 (1867).—Schischkin,
l. c. 793, Tab. XLIX–10, 11.
Distr. Iran, Afghanistan.

Acanthophyllum squarrosum Boiss., Diag. Ser. II, I : 81 (1854), F. O. I : 562
(1867).—Schischkin in Fl. URSS VI : 783 (1936).
Bulola (June 25, 1955 S. K.).

Distr. Pakistan, Afghanistan, Iran, Caucasus.

Arenaria calcicola Gilli in Fedde, Rep. Bd. LIX : 172 (1956).
Distr. Afghanistan.

Arenaria Griffithii Boiss., Diag. Ser. II, I : 89 (1854), F. O. I : 697.—Schischkin
in Fl. URSS VI : 536, Tab. XXX–6.
Distr. Afghanistan, Pam.—Al.

Arenaria Koelzii Rech. f. in Engler, Bot. Jahrb. LXXV : 342 (1951).
Distr. Afghanistan.

Arenaria leptoclados Guss., Fl. Sic. II : 824 (1844).—Boiss., F. O. I : 701.—
Schischkin in Fl. URSS VI : 539.

Distr. Afghanistan, Syria, Caucasus, Europe, Africa.

Arenaria multiflora Gilli in Fedde, Rep. Bd. LIX : 171 (1956).
Distr. Afghanistan, Syr–Dar.

Arenaria orbiculata Royle ex Edgew. et Hooker f., F. B. I. I : 240.
Nuristan : Shabul Gul (Aug. 6, 1955 S. K.).

Distr. Afghanistan, Himalaya : Kashmir to Bhutan.

Arenaria serpyllifolia L., Sp. Pl. 423 (1753).—Boiss., F. O. I : 701.—Aitch., J.

L. S. XVIII: 38, T. L. S. n. III: 41.—Schischkin in Fl. URSS VI: 539.

Pagman near Kabul (July 15, 1955 S. K.).

Distr. Temperate Europe and Asia, N. Africa.

Our material belongs totally to var. *serpyllifolia*.

Arenaria trichotoma Royle ex Hook. f., F. B. I. I: 235 (1874).

Distr. W. Himalaya, Afghanistan.

According to Mattfeld (in Fedde, Repert. Beih. XV: 216, 1922) this species may not be included in sect. *Alsine* but in true *Arenaria*.

Buffonia alta Gilli in Fedde Rep. Bd. LIX: 174, Abb. 3 (1956).

Distr. Afghanistan.

Buffonia macrocarpa Seringe in DC., Prodr. I: 398 (1824).—Boiss., F. O. I: 667.—Schischkin in Fl. URSS VI: 476, Tab. XXVI-6.

Between Herat and Iranian frontier (July 7, 1955 K. Yamashita).

Distr. Iran, Gorn.—Turkm.

Buffonia Oliveriana Ser. in DC., Prodr. I: 388 (1824).—Boiss., F. O. I: 665.—Schischkin, l. c. 479, Tab. XXVI-5.

Distr. Mesopotamia, Iran, Afghanistan, Gorn.—Turkm.

Cerastium cerastoides (L.) Britton in Mem. Torr. Bot. Club. V: 150 (1894).

—Wendelbo in Nytt Mag. Bot. I: 27 (1952).—Schischkin, l. c. 435, Tab. XXII-8.

Fig. 37.

Cerastium trigynum Vill., Hist. Pl. Dauph. III: 645 (1789).—Boiss., F. O. I: 715. Shabul Gul (Aug. 6, 1955 S. K.).

Distr. Northern Hemisphere in alpine or arctic zones.

Cerastium dichotomum L., Sp. Pl. 438 (1753).—Boiss., F. O. I: 721.—Aitch., J. L. S. XVIII: 37, T. L. S. n. III: 41.—Schischkin, l. c. 447, Tab. XXIV-1.

Distr. Mediterranean Reg., Caucasus, Central Asia, Iran, Afghanistan.

Cerastium glutinosum Fries, Novit. Fl. Suec. 1 ed. 51 (1817).—Boiss., F. O. I: 724.—Schischkin, l. c. 425.

Distr. Europe, Caucasus, Afghanistan.

Cerastium Thomsoni Hooker f., F. B. I. I: 228.—Aitch., J. L. S. XIX: 153.

Distr. Pakistan (Kuram), W. Himalaya.

Cerastium viscosum L., Sp. Pl. 51 (1753).—Boiss., F. O. I: 722.

Cerastium glomeratum Thuill., Fl. Par. ed. II: 225 (1799).—Schischkin, l. c. 450 (1936).

Cerastium vulgatum L. var. *glomerata* (Thuill.) Edgew. et Hooker f., F. B. I. I: 228. Pagman (July 1955 S. K.).

Distr. Cosmopolitan, probably a native of Europe.

Dianthus cf. **afghanicus** Rech. f. in Bot. Jahrb. LXXV: 360 (1951).

Lataband, Mullaomur (June 15, 1955 S. K.), between Sarobi and Kabul (June 18, 1955 S. K.).

Distr. Afghanistan.

Our specimens appear to be closest to *D. afghanicus*, but differ in distinctly barbate petal-limbs; and also stand near to *D. floribundus* Boiss. (F. O. I: 490), and *D. Seguieri* of F. B. I. I: 215, but differ chiefly from the former in the shorter vagina of the leaf base (1 mm long) and obovate petal-limbs copiously barbate above, and from the latter in narrower leaves with 3 nerves and in solitary flowers.

Dianthus crinitus Smith in Act. Soc. Linn. Lond. II: 300 (1794).—Boiss., F. O. I: 496, Suppl. 78.—Hooker f., F. B. I. I: 215.—Schischkin in Fl. URSS VI: 850, Tab. LIV-5.

Between Doab and Pulikhumri (June 26, 1955 S. K.).

Distr. Asia Minor, Armenia, Caucasus, Central Asia, Iran, Afghanistan, Pakistan.

Dianthus cyri Fisch. et Mey., Ind. Sem. Horti Petrop. IV: 34 (1838).—Boiss., F. O. I: 482.—Schischkin, l. c. 860, Tab. LIV-2.

Distr. Egypt, Arm.-Kurd., Asia Minor, Caucasus, Iran, Afghanistan.

Dianthus dilepis Rech. f. in Engler, Bot. Jahrb. LXXV: 361 (1951).

Distr. Afghanistan.

Dianthus nuristanicus Gilli in Fedde Rep. Bd. LIX: 162 (1956).

Distr. Afghanistan (Nuristan).

Dianthus orientalis Adams in Web. et Mohr, Beitr. I: 54 (1805).—Schischkin, l. c. 854.—Bot. Mag. t. 1069.

Dianthus fimbriatus M. B., Fl. Taur.-Cauc. I: 332, 428 (1808).—Hooker f., F. B. I. I: 215.—Aitch., J. L. S. XIX: 153, T. L. S. n. III: 39.

Distr. Caucasus, Arm.-Kurd., Asia Minor, Iran, Afghanistan, W. Tibet.

Boissier reported *D. fimbriatus* β . obtusi-squameus from Iran and Afghanistan.

Dianthus paghmanicus Rech. f. in Engler, Bot. Jahrb. LXXV: 362 (1951).

Distr. Afghanistan.

Dianthus tabrisianus Bienert ex Boiss., F. O. I: 496, Suppl. 78.—Schischkin, l. c. 855.

Pagman near Kabul (July 15, 1955 S. K.).

Distr. Caucasus, Iran, Afghanistan.

Gypsophila acerosa (Boiss.) Boiss., F. O. I: 558 (1867).

Distr. Afghanistan.

Gypsophila alsinoides Bunge in Arb. Naturf. Ver. Riga I, II: 179 (1847).—Boiss., F. O. I: 549.—Aitch., J. L. S. XVIII: 36, T. L. S. n. III: 40.—Schischkin, l. c. 773, Tab. XLVIII-5.

Distr. Kiz.-Kum., Kara-Kum., Iran, Afghanistan.

Gypsophila filipes (Boiss.) Schischkin in Fl. URSS VI: 775 (1936).

Saponaria filipes Boiss., Diag. Ser. II, I: 69 (1854).

Gypsophila floribunda β . major Boiss., F. O. I: 553 (1867).

Distr. Afghanistan, Pam.-Al.

Gypsophila galiifolia Gilli in Fedde, Rep. Bd. LIX: 165 (1956).

Distr. Afghanistan.

Gypsophila herniarioides Boiss., F. O. Suppl. 84 (1888).

Distr. Afghanistan.

Gypsophila Honigbergii Boiss., F. O. I: 558.

Distr. Afghanistan.

Gypsophila laxiflora (Boiss.) Rech. f. in Fedde, Rep. Bd. LIX: 163 (1956).

Acanthophyllum camphylacme Rech. f. in Bot. Jahrb. Bd. LXXV: 359 (1951).

Acanthophyllum laxiflorum Boiss., Diag. Ser. II, I: 82 (1854).

Gypsophila erinacea Boiss., F. O. I: 557.

Distr. Afghanistan.

Gypsophila paniculata L., Sp. Pl. 407 (1753).—Aitch., T. L. S. n. III: 40.
—Schischkin, 1. c. VI: 749, Tab. XLVII. Reich., Ic. VI, t. 242.

Distr. Europe, Caucasus, W. Siberia, Central Asia, Afghanistan, Mongolia, W. China.

Gypsophila porrigens (L.) Fenzl in Endl., Gen. Pl. I: 972 (1836–41).—Boiss., F. O. I: 557.—Schischkin in Fl. URSS VI: 776.

Kabul, Tomb of Ex-King (July 18, 1955 S. K.).

Distr. Asia Minor, Syria, Armenia, Caucasus, Mesopotamia, Gorn.—Turkm., Iran, Afghanistan.

Gypsophila raphiophylla Rech. f. in Österr. Bot. Zeit. CIV: 173 (1957).

Distr. Afghanistan.

Gypsophila Stewartii Thoms. ex Edgew. et Hooker f., F. B. I. I: 216.—Aitch., J. L. S. XIX: 153.

Distr. Pakistan, Afghanistan.

Herniaria hirsuta L., Sp. Pl. 317 (1753).—Aitch., J. L. S. XVIII: 89.—Muravjeva in Fl. URSS VI: 571, Tab. XXXIV–2.

Herniaria cinerea DC., Fl. Fr. Suppl. VI: 375 (1815).—Boiss., F. O. I: 739.

Distr. Europe, North Africa, Asia Minor, Caucasus, Central Asia, Iran, Afghanistan.

Herniaria incana Lam., Encycl. Method. III: 124 (1789).—Boiss., F. O. I: 741.
—Muravjeva in Fl. URSS VI: 568, Tab. XXXIV–3.

Between Kandai and Seprigal (July 28, 1955 S. K.), between Seprigal and Voma (July 29, 1955 S. K.).

Distr. Afghanistan, Iran, Central Asia, Caucasus, Asia Minor, Europe.

Holosteum glutinosum (M. B.) Fisch. et Mey., Ind. Sem. Horti Petrop. VI: 52 (1839).—Muravjeva in Fl. URSS VI: 467, Tab. XXV–3.

Holosteum liniflorum Stev. ex Fisch. et Mey., Ind. Sem. Horti Petrop. IV: 10 (1838).—Boiss., F. O. I: 710.

Distr. E. Europe, Caucasus, Central Asia (common), Asia Minor, Arm.—Kurd., Iran, Afghanistan.

Holosteum umbellatum L., Sp. Pl. 88 (1753).—Hooker f., F. B. I. I: 227.—Aitch., T. L. S. n. III: 40.—Schischkin, l. c. VI: 467, XXV-2.

Distr. Europe, North Africa, Caucasus, Central Asia (common), Iran, Afghanistan, Kashmir, Dz.-Kashg.

Lepyrodiclis holosteoides Fenzl ex Fisch. et Mey., Enum. Pl. Nov. Schrenk I: 93 (1841).—Boiss., F. O. I: 668.—Gorskova in Fl. URSS VI: 480.—Wagenitz in Ann. Naturhist. Mus. Wien Bd. LXI: 76 (1957).

Arenaria holosteoides Edgew., F. B. I. I: 241.—Aitch., T. L. S. n. III: 41.

Doab (June 24, 1955 S. K.), Nuristan: Between Pushuki and Kushitaki (Aug. 4, 1955 S. K.).

Distr. W. Himalaya: Kashmir to Kumaon, W. Tibet, Pakistan, Central Asia, Afghanistan, Iran, Caucasus, Asia Minor.

Lepyrodiclis stellarioides Schrenk ex Fisch. et Mey., Enum. Pl. Nov. Schrenk I: 93 (1841).—Boiss., F. O. I: 659.—Gorskova, l. c. 481.

Distr. Caucasus, Central Asia, Afghanistan, Iran.

Lepyrodiclis tenera Boiss., Diag. Ser. II, I: 84 (1854), F. O. I: 669—Wagenitz in Ann. Naturhist. Mus. Wien, Bd. LXI: 76 (1957).

Arenaria tenera (Boiss.) Edgew., F. B. I. I: 242.

Nuristan: Between Voma and Trokikorl (July 31, 1955 S. K.).

Distr. Afghanistan (E), W. Himalaya: Kishtwar and Banahal.

Lychnis cabulica Boiss. ex Aitch., J. L. S. XIX: 153 (1882).

Melandrium cabulicum Boiss., Diag. Ser. II, I: 79 (1854), F. O. I: 661.

Distr. Afghanistan.

Lychnis indica Benth. in Royle Ill. 81 (1834).

var. **fimbriata** Edgew. & Hooker f., F. B. I. I: 225 (1874).

Lychnis fimbriata Benth., l. c. 80, t. 20 B (1834).

Distr. Pakistan (Kuram), W. Himalaya.

Lychnis macrorrhiza Royle ex Benth. in Royle, Ill. 80 (1834).—Hooker f., F. B. I. I: 223.

Nuristan: Shabul Gul (Aug. 6, 1955 S. K.).

Distr. Afghanistan (Nuristan), W. Himalaya, W. Tibet.

Our specimen matches in the character of seeds which are 1 mm across with Hooker's description, but is different in the pubescence which consists of recurved simple hairs below and uniseriate ones above.

Minuartia afghanica Rech. f. in Bot. Jahrb. LXXV: 347 (1951).

Distr. Afghanistan.

Minuartia lineata (C. A. Mey.) Bornm. in Beih. Bot. Centralb. XXVII, Abt. 1: 318 (1910).—Mattfeld in Fedde, Rep. Beih. Bd. XV: 156 (1922).—Schischkin in Fl. URSS VI: 508.

Alsine juniperina Fenzl ϵ . *lineata* (C. A. Mey.) Boiss., F. O. I: 677.

- Arenaria foliosa* Royle ex Hook. f., F. B. I. I: 236.—Aitch., J. L. S. XVIII: 38.
 ? *Arenaria kashmirica* Edgew. in Hooker f., l. c.
- Nuristan: Between Voma and Trokikorl (July 31, 1955 S. K.)—quite glabrous, between Trokikorl and Chatrass (Aug. 1, 1955 S. K.)—sparingly glandular-pubescent.
 Distr. (uncertain). W. Himalaya: Kashmir to Garwal, W. Tibet, Afghanistan, Iran, Caucasus.
- Minuartia Meyeri** (Boiss.) Bornm. in Beih. Bot. Centralb. XXVII, II: 318 (1919).
 —Schischkin in Fl. URSS VI: 489.
Alsine Meyeri Boiss., Diag. Ser. I, VIII: 96 (1849), F. O. I: 682.
Arenaria Meyeri Edgew. ex Hooker f., F. B. I. I: 236.
 Distr. Asia Minor, Arm.-Kurd., Caucasus, Central Asia, Iran, Afghanistan, Pakistan.
- Minuartia subtilis** (Fenzl) Hand.-Mazz. in Ann. K. K. Hofm. Wien XXVI: 148 (1912).—Mattf. in Fedde, Repert. Beih. XV: 36 (1922).
Alsine tenuifolia L. η . *subtilis* (Fenzl) Boiss., F. O. I: 687 (1867).
Alsine tenuifolia L. α . *genuina* Boiss., l. c. 686, quoad pl. ex Afghanistan.
 Distr. Asia Minor, Iran, Afghanistan.
- Ochotonophila allochrusoides** Gilli in Fedde, Rep. Bd. LIX: 169 (1956).
 Distr. Afghanistan.
- Pseudostellaria cashmiriana** Schaeftlein in Phytion VII: 195 (1957).
Stellaria bulbosa Wulfen sensu Edgew. et Hook. f. in Hook. f., F. B. I. I: 231 p. p. (1874).—Aitch., J. L. S. XVIII: 38.
 Distr. W. Himalaya, Afghanistan.
- Sagina apetala** Arduino, Animadv. Bot. Spec. II: 22, Tab. 8 (1764).—Boiss., F. O. I: 663 (1867).—Steinberg in Fl. URSS VI: 474, Tab. XXV-6 (1936).
 Distr. Europe, Caucasus, Asia Minor, Afghanistan, N. Africa.
- Sagina procumbens** L., Sp. Pl. 128 (1753).—Boiss., F. O. I: 662.—Hooker f., F. B. I. I: 242.—Steinberg in Fl. URSS VI: 474.
 Nuristan: Shabul Gul (Aug. 6, 1955 S. K.).
 Distr. Himalaya, W. Tibet, W. Siberia, W. Asia, Caucasus, Europe, N. America, widely introduced in the Southern Hemisphere.
- Sagina quinquevalvis** Gilli in Fedde, Rep. Bd. LIX: 170 (1956).
 Distr. Afghanistan.
- Saponaria Griffithiana** Boiss., Diag. Ser. II, I: 70 (1854), F. O. I: 524, Suppl. 83.—Gorskova in Fl. URSS VI: 864, Tab. LV-1.—Wendelbo in Nytt Mag. Bot. I: 30 (1952).
Saponaria corrugata Franch. in Ann. Sci. Nat. 6 Sér. XV: 237, Tab. 12 (1883).
Pleioneura Griffithiana (Boiss.) Rech. f. in Bot. Jahrb. LXXV: 357 (1951).
Saponaria silenoides H. Winkler in Vidensk. Medd. Kjöbnh. 50 (1901).
 Nuristan: Between Voma and Trokikorl (July 31, 1955 S. K.).

Distr. Iran, Afghanistan, Pam.—Al.

Rechinger published *Pleioneura silenoides* n. sp. in Bot. Jahrb. LXXV : 358 from Afghanistan.

Saponaria orientalis L., Sp. Pl. 409 (1753).—Boiss., F. O. I : 531 (1867).

Distr. Caucasus, Asia Minor, Central Asia, Iran, Afghanistan.

Saponaria oxyodonta Boiss., F. O. I : 525.

Shishigar (June 11, 1955 S. K.).

Distr. Syria, Palestine, Afghanistan, Pakistan.

Saponaria Vaccaria L., Sp. Pl. 409 (1753).—Edgew. & Hooker f., F. B. I. I : 217.—Aitch., J. L. S. XVIII : 37, T. L. S. n. III : 40.

Distr. Eurasia, a weed of cultivation.

Silene affghanica Rohrb., Monogr. Silene 210 (1868).—Wendelbo in Nytt Mag. Bot. I : 29 (1952).

Distr. Afghanistan, Pakistan.

Silene apetala Willd., Sp. Pl. ed. IV, II : 703 (1799).—Boiss., F. O. I : 596.—Hooker f., F. B. I. I : 218.—Schischkin in Fl. URSS VI : 614.—Reichb., Ic. VI, t. 275, f. 5060.

Distr. Mediterranean Region, Iran, Gorn.—Turkm., Afghanistan, Pakistan.

Silene arenosa C. Koch in Linnaea XV : 711 (1841).—Hooker f., F. B. I. I : 219.—Schischkin, l. c. 682, Tab. XLI-3.

Silene leyseroides Boiss., Diag. Ser. I, I : 41 (1842), F. O. I : 603.

Between Sarobi and Kabul (June 18, 1955 S. K.), Charikar (June 23, 1955 S. K.), between Doab and Pulikhumri (June 26, 1955 S. K.).

Distr. Mesopotamia, Caucasus, Armenia, Iran, Afghanistan, Pakistan.

Silene bamianica Gilli in Fedde, Rep. Bd. LIX : 174 (1956).

Distr. Afghanistan.

Silene Brahuica Boiss., F. O. I : 615.—Schischkin, l. c. VI : 653.

Distr. Afghanistan, Central Asia, Pakistan.

Silene brevistaminea Gilli in Fedde, Rep. Bd. LIX : 175, Abb. 4 (1956).

Distr. Afghanistan.

Silene cabulica Bornm. in Bot. Jahrb. LXVI : 221 (1934).

Distr. Afghanistan.

Silene citrina Boiss., F. O. Suppl. 101 (1888).

Distr. Afghanistan.

Silene conoidea L., Sp. Pl. 418 (1753).—Boiss., F. O. I : 580.—Hooker f., F. B. I. I : 218.—Aitch., J. L. S. XVIII : 37, T. L. S. n. III : 40.

Shishigar (June 11, 1955 S. K.).

Distr. Mediterranean Region, Caucasus, Central Asia, Iran, Afghanistan, Pakistan, W. Himalaya, W. Tibet.

A weed of cultivated fields.

Silene coniflora Nees ex Otth in DC., Prodr. I: 331 (1824), F. O. I: 578.—Aitch., T. L. S. n. III: 40.—Schischkin in Fl. URSS VI: 691.

Distr. Asia Minor, Central Asia, Afghanistan, Iran.

Silene Cucubalus Wibel, Prim. Fl. Werth. 241 (1799).—Wendelbo in Nytt Mag. Bot. I: 28 (1952).

Silene inflata Smith, Fl. Brit. 467 (1800).—Boiss., F. O. I: 628.—Hooker f., F. B. I. I: 218.

Silene latifolia (Mill.) Rendle et Britt., List Brit. Seed-Plants: 5 (1907) non Link nec Gray, nec Poiret etc.—Schischkin, l. c. 596, Tab. XXXV-4.

Nuristan: Between Seprigal and Voma (July 29, 1955 S. K.), between Trokikori and Chatrass (Aug. 1, 1955 S. K.), between Kushitaki and Pronz (Aug. 4, 1955 S. K.), between Pronz and Eschtaway (Aug. 5, 1955 S. K.).

Distr. Eurasia and North Africa, naturalized in Japan, N. S. America.

Silene Griffithii Boiss., Diag. Ser. II, I: 76 (1846), F. O. I: 637.—Hooker f., F. B. I. I: 220.

Melandrium suaveolens (Kar. et Kir.) Schischkin in Fl. URSS VI: 711, Tab. XLIII-6.

Silene suaveolens Kar. et Kir. in Bull. Soc. Nat. Mosc. XV: 168 (1842).

Melandrium Griffithii Rohrb. in Linnaea XXXVI: 248 (1869-70).

Carpophora Hoffmeisteri Klotzsch, Bot. Erg. Reise Waldem., 139 t. 32 (1862).

Silene multifida Edgew. in Trans. Linn. Soc. XX: 34 (1846).

Nuristan: Eschtaway (Aug. 7, 1955 S. K.).

Distr. Central Asia, W. Himalaya, Dz.-Kashg., Afghanistan.

Our specimen has capsules rudimentarily triseptate at the base. This not rarely met with in the species now treated as *Melandrium*.

Silene macronychia Boiss., F. O. Suppl. 100 (1888).

Distr. Afghanistan.

Silene paghmanica Gilli in Fedde, Rep. Bd. LIX: 176 (1956).

Distr. Afghanistan.

Silene porandica Gilli, l. c. 177.

Distr. Afghanistan.

Silene Moorcroftiana Wall. ex Benth. in Royle, Ill. 79 (1834).—Edgew. et Hooker f., F. B. I. I: 219 (1874).—Aitch., J. L. S. XVIII: 37.—Wendelbo in Nytt Mag. Bot. I: 29.

Distr. Afghanistan, Pakistan, W. Himalaya: Kashmir to Garwal.

Silene shanbashakensis Rech., f. in Bot. Jahrb. LXXV: 363 (1951).

Distr. Afghanistan.

Silene surobica Gilli in Fedde, Rep. Bd. LIX: 175 (1956).

Distr. Afghanistan.

Spergularia diandra (Guss.) Heldr. et Sart. in Heldr., Herb. Graec. norm. no.

492, no. 1124 (1855).—Boiss., F. O. I.: 733.—Gorschkova in Fl. URSS VI: 557, Tab. XXXIII-2 (1936).

Distr. Europe, N. Africa, Asia Minor, Caucasus, W. Siberia, Central Asia, Iran, Afghanistan.

Spergularia marina (L.) Griseb., Spicil. Fl. Rumel. I: 213(1843).

Spergularia salina J. et C. Presl, Fl. Cech. 95 (1819).—Gorschkova, l. c. 561, Tab. XXXIII-4.

Kabul (June 22, 1955 S. K.).

Distr. Eurasia.

Spergularia media (L.) Presl, Fl. Sic. I: 161 (1826).

Spergularia marginata (DC.) Kittel, Taschenb. Fl. Deutschl. 2 ed. 1004 (1844).—Boiss., F. O. I.: 733.—Gorschkova, l. c. 557, Tab. XXXIII-3.

Distr. Europe, Caucasus, Central Asia, Afghanistan.

Spergularia rubra (L.) J. et C. Presl, Fl. Cech. 94 (1819).—Boiss., l. c. 732.

Spergularia campestris (L.) Aschers., Fl. Prov. Brandenb. II: 94(1864).—Gorschkova, l. c. 558, Tab. XXXIII-5.

Distr. Eurasia.

Stellaria alsinoides Boiss. et Buhse, Aufz. 41 (1860), F. O. I: 705.—Schischk., l. c. 423.—Wendelbo in Nytt Mag. Bot. I: 27 (1952).

Distr. Iran, URSS along the border of Afghanistan, Pamiro-Alai, Pakistan.

Stellaria graminea L. var. **montioides** Edgew. et Hooker f., F. B. I. I: 233 (1874).

Nuristan: Shabul Gul (Aug. 6, 1955 S. K.).

Distr. Afghanistan, Pakistan.

Our material has also eciliate leaves and bracts as Wendelbo has stated in Nytt Mag. Bot. I: 27 upon the collection from Chitral in Northwest Pakistan. Petals are equalling to or slightly exerting the calyx. Anthers are definitely purple. As for the correct systematic position of this plant, a further investigation is needed.

Stellaria Koelzii Rech. f. in Bot. Jahrb. LXXV: 344 (1951).

Distr. Afghanistan.

Stellaria Kotschyana Fenzl in Kotschy, Pl. Pers. austr. (1855).—Boiss., F. O. I: 705.—Aitch., J. L. S. XIX 554.—Schischkin, l. c. 422.

Between Bulola and Doab (June 25, 1955 S. K.), Nuristan: Between Kushitaki and Pronz (Aug. 4, 1955 S. K.), Shabul Gul (Aug. 6, 1955 S. K.).

Distr. Afghanistan, Iran, Gorn.—Turkm.

Stellaria media Vill., Hist. Pl. Dauph. III: 615 (1789).—Boiss., F. O. I: 707.—Hook. f., F. B. I. I: 230.—Aitch., J. L. S. XVIII: 37.—Schischkin in Fl. URSS VI: 395, Tab. XX-2 (1936).—Ohwi in Acta Phytotax. Geobot XI: 250 (1942).

Stellaria media Cyr. var. *minor* Makino in J. Jap. Bot. III: 2 (1926).

Stellaria minor (Mak.) Honda in Bot. Mag. Tokyo LVI: 14 (1942).

var. **gymnocalyx** Trautv. in Acta Horti Petrop. I: 33 (1871).

Nuristan: Between Seprigal and Voma (July 29, 1955 S. K.).

var. **procera** Klett et Richter, Fl. Leipz. 382 (1830).

Stellaria neglecta Weihe in Bluff et Fingerh., Comp. Fl. Germ. ed. 1, I: 506 (1825).—Schischkin, l. c. 396.—Ohwi, l. c. 249 (1942).

Stellaria media β . *major* Koch, Syn. Fl. Germ. 1 ed. 118 (1837).

Nuristan: Chatrass (Aug. 2, 1955 S. K.).

Distr. Cosmopolitan.

Stellaria monosperma Buch.-Ham. ex Don, Prodr. Fl. Nep. 215 (1825).—Mizushima in Journ. Jap. Bot. XXXII: 248 (1957).

forma **monosperma**.

S. glandulifera Klotzsch in Klotzsch et Garcke, Bot. Ergebn. Reise Waldemar 141, t. 28 (1862).

S. crispata Wall. ex Edgew. et Hooker f., F. B. I. I: 229.—Aitch., J. L. S. XVIII: 37.

Nuristan: Between Trokikorl and Chatrass (Aug. 1, 1955 S. K.).

Distr. Himalaya: Kashmir to Sikkim, Khasia Mts.

Stellaria palustris Ehrh., Beitr. V: 176 (1789). nom. nud.—Retz., Fl. Scand. Prodr. 2 ed. 106 (1795).—Shischkin, l. c. 406.

Stellaria glauca With., Bot. Arr. Brit. Pl. 3 ed. II: 420 (1796).—Aitch., J. L. S. XIX: 153.—Ledeb. Ic. t. 423.

Distr. Eurasia.

Stellaria platyphylla Rech. f. in Bot. Jahrb. LXXV: 345 (1951).

Distr. Afghanistan.

Stellaria sarcophylla Rech. f., l. c. 346 (1951).

Distr. Afghanistan.

Stellaria Webbiana Wall. ex Benth. in Royle, Ill. 81, t. 21, f. 2 (1834).—Aitch., J. L. S. XVIII: 37.

Distr. Himalaya: Kumaon to Sirmur, Afghanistan (Kuram).

Velezia rigida L., Sp. Pl. 332 (1753).—Boiss., F. O. I: 478.—Gorschikova in Fl. URSS VI: 869, Tab. XLV-3.—Reich., Ic. t. 246, f. 5007.

Distr. Mediterranean Region, Caucasus, Central Asia, Iran, Afghanistan.

Ceratophyllaceae

Ceratophyllum demersum L., Sp. Pl. 992 (1753).—Boiss., F. O. IV: 1202.—Hooker f., F. B. I. V: 639.

Distr. Cosmopolitan.

Ranunculaceae by Michio Tamura

Aconitum rotundifolium Kar. et Kir. in Bull. Soc. Imp. Nat. Mosc. XV (1842) 139.—Stapf in An. Roy. Bot. Gard. Calc. X-2 (1905) 149.

A. napellus var. *rot.* (Kar. et Kir.) Kar. et Kir. ex Aitch., J. L. S. XVIII: 31.

Distr. Western Himalaya : Northern Panjab, Chitral, Gilgit, Baltistan, Chamba, Lahul, Spiti, Northern Bashar, Safid Kuh, Central Asia : Tianshan, Songaria, Kashgaria, Afghanistan.

var. **obtusilobum** Tamura var. nov.

Caulis scaposus simplex vel pauci-ramosus ad 45 cm altus 1–3-florus. Folia 2.5–4 cm longa et lata ad sextum inferum 5-partita, partitionibus 3-lobatis, lobis 3-lobulatis, lobulis ovatis vel obovatis vel lanceolatis apice rotundatis vel obtusis interdum acutis. Pedicelli 5–40 mm longi sepalaque curvi-pilosi. Stamina glabra. Carpella 5 villosa.

Differt a typo habitu minore, caule scaposo paucifloro.

Nuristan : Between Chatrass and Kushimaicot (Aug. 2, 1955 S. K.)—Typus in Herb. Univ. Kyoto, Shabul Gul (Aug. 6, 1955 S. K.).

This plant is similar to *A. tapeinocranum* and *A. naviculare* in appearance, but differs from the former by having the pedicels and sepals covered with curved and eglandulose hairs, and from the latter by having the pedicels covered with curved hairs and the glabrous stamens.

Aconitum tapeinocranum Rech. f. in Anzeiger math.-naturw. Österr. Akad. Wissensch. XCI: 71 (1954).

Distr. Afghanistan.

Actaea spicata L., Sp. Pl. (1753) 504.—Aitch., J. L. S. XIX: 150.

Distr. Europe, Caucasus, Afghanistan, Himalaya : from Bhutan to Hazara, Western Siberia.

Adonis aestivalis L., Sp. Pl. 2 ed. 771 (1762).—Aitch., l. c. 30, et in T. L. S. n. III: 29.—Bornmüller in Engl. Bot. Jahrb. LXVI (1933) 220.

Distr. Europe, Mediterranean region, Asia Minor, Caucasus, Central Asia, Western Siberia, Iran, Afghanistan, Western Himalaya : from Kumaon to Kashmir, Hazara, Peshawar.

Adonis scrobiculata Boiss., Diagn. Ser. II, I (1853) 6, et F. O. I: 17.—Hook. f. et Thoms., F. B. I: 15.

Between Sarobi and Kabul (Jun. 18, 1955 S. K.).

The achenes are very variable. The distinction between this species and *A. aestivalis* is not clear.

Anemone biflora DC., Syst. Nat. I:201 (1818).—Boiss., l. c. 12.—Aitch., l. c. 30 (1881), et l. c. (1888) 29.—Ulbr. in Engl. Bot. Jahrb. XXXVI: 250 (1906).—Bornm., l. c. (1888) 29.—Ulbr. in Engl. Bot. Jahrb. XXXVI: 250 (1906).—Bornm., l. c. 220.

Distr. Kashmir, Afghanistan, Iran.

Anemone narcissiflora L., Sp. Pl. 542 (1753).—Ulbr., l. c. 263.

Distr. Europe, ? Afghanistan, Himalaya, Central Asia, Siberia, Northern Mongolia, Northern Korea, Japan, Saghalien, Kamtschatka, North America.



Fig. 49. *Batrachium kabulense* Tamura: 1 Flower, 2 Petal, 3 Bract, 4 Head of Achenes, 5 Matured Achene, 6 Young Achene, 7 Leaf. (Kabul).

Anemone tetrasepala Royle, Ill. Bot. Himal. 53 (1839).—Aitch., 1. c. 148 (1882)
—Ulbr., 1. c. 268.

Distr. Western Himalaya : Marri, Kashmir, Kishtwar, Afghanistan.

Aquilegia afghanica (Brühl) Brühl ex Durand et Jackson, Ind. Kew. Suppl. I (1902) 34.—Munz, in Gent. Herb. VII: 90 (1949).

A. vulgaris ssp. *Moorcroftiana* var. *afghanica* Brühl in Jour. Asiat. Soc. Bengal LXI 307 (1893).

A. pubiflora var. ? *humilior* Aitch. et Hemsl. in Aitch., 1. c. 150 (1882).

Distr. Afghanistan.

Aquilegia euchroma Rech. f., 1. c. 7.

Distr. Afghanistan.

Aquilegia fragrans Benth. in Maund Botanist IV t. 181 (1840).

A. vulgaris var. *fragrans* Benth. ex Aitch., 1. c. 31 (1881).

Distr. Kashmir, Panjab, Afghanistan.

Aquilegia Moorcroftiana Wall. ex Royle, Ill. Bot. Himal. 55 (1839).

A. vulgaris var. *Moorc.* (Wall.) Aitch., 1. c. 31 (1881).

Distr. Himalaya : from Kashmir to Garwal, Tibet, Afghanistan.

Aquilegia pubiflora Wall. ex Royle, 1. c. 55.

A. vulg. var. *pubiflora* (Wall.) Walp., Ann. IV (1857) 25.—Aitch., 1. c. 31 (1881).

Distr. Himalaya : Kashmir, Panjab, Afghanistan.

Batrachium aquatile (L.) Wimm., Fl. Schles. 8 (1841).

Ranunculus aquatilis L., 1. c. 556 (1753).—Aitch., 1. c. 149 (1882).

Distr. Europe, Northern Africa, Afghanistan.

Batrachium kabulense Tamura sp. nov. **Fig. 49.**

Planta aquatica submersa. Caulis glaber ultra 70 cm longus ramosus inferne ad nodos radicans, internodiis supernis 9~8 cm longis. Folia omnia immersa glabra flaccida in speciminibus penicillatim collabentia ca. 5~8 cm longa ternata, segmentis lateralibus bi vel quadri ternatis, segmento medio bi vel tri ternato longioribus, segmentis ultimis capillaribus, petiolis brevibus ad 12 mm longis inferne ad vaginam dilatatis vel subsessilibus tantum vaginatis. Pedicelli ad folium oppositi 3~4.5 cm longi folio breviores vel aequilongi glabri. Flores ca. 10~12 mm diam. Sepala 5 ovata ca. 2mm longa 1.2mm lata acuta vel obtusa non reflexa. Petala 5 oblonga vel anguste obovata ca. 4~5.5 mm longa 2.2~3 mm lata alba inferne lutescentia. Stamina 10~12, filamentis capitulo carpellorum brevioribus. Acheniorum capitula globosa ca. 4.5 mm longa 4mm crassa plus minus nutantia, receptaculo piloso. Achenia ca. 30~35 oblique ovata ca. 1 mm longa 0.7 mm lata 0.5 mm crassa vix rostrata.

Differt a *B. Kauffmanii* acheniis valde minoribus pedicellis brevioribus, a *B. Rionii* foliis valde longioribus majoribus acheniis paucioribus.

Kabul (Jul. 16, 1955 S. K.)—Typus in Herb. Univ. Kyoto.

Distr. Afghanistan.

Butrachium trichophyllum (Chaix) V. d. Bossche, Prodr. Fl. Bat. 7 (1850).

Ranunculus trich. Chaix ex Vill., Hist. Pl. Dauph. I: 335 (1786).—Boiss., l. c. 29 (1856).

R. aquatilis var. *foliis omnibus dissectis segmentis filiformibus* Aitch., l. c. 29 (1888).

Nuristan: Pushuki (Aug. 8, 1955 S. K.).

Distr. Europe, Caucasus, Afghanistan, Himalaya, China, Siberia, Kamtschatka, North America.

The leaves of our specimen are about 5 cm long, and have hispid sheathes, and their segments are more or less droop together like a writing brush; the pedicels are 1.3~2 cm long and much shorter than leaves; the flowers are about 1.2 cm across; the stamens are a little longer than the head of hispid pistils.

Callianthemum cashemirianum Camb. in Jacq. Voy. Bot. 5 (1844).—Aitch., l. c. 30 (1881).

Distr. Himalaya: from Kashmir to Sikkim, Afghanistan.

Caltha palustris L., Sp. Pl. 558 (1753).—Aitch., l. c. 30 (1881).

var. **alpina** Schur in Verh. Mitth. Siebenb. V. N. IV: 30 (1853).

C. alpina (Schur) Schur, Enum. Pl. Transs. 25 (1866).

C. laeta var. *alpina* (Schur) Aschers. et Graebn., Syn. Fl. Mitt.-Eur. V—2: 570 (1929).

Nuristan: Chatrass (Aug. 2, 1955 S. K.), between Chatrass and Budigrah (Aug. 2, 1955 S. K.), Pronz (Aug. 4, 1955 S. K.).

Distr. Europe, Caucasus, Afghanistan, Himalaya.

The stems of our plants are erect 45~75 cm high and branched; the radical leaves are cordate-reniform, 8~10 cm long, 10~13 cm broad, regularly mucronate-dentate, and have long (35~45 cm) petioles. The flowers are 4~7 in number, and about 2.5 cm across. The follicles are 7~15 in number, spread-ascending, 6~10 mm long, about 5 mm broad, straight on the outside, and have long (1.5~2 mm) styles. The plant which is enumerated as *C. palustris* by Aitchison l. c. may belong to this variety.

Ceratocephalus falcatus (L.) Pers., Syn. I: 341 (1805).

Ranunculus falcatus L., Sp. Pl. 556 (1753).—Aitch., l. c. 30 (1881), et l. c. 30 (1888).

Distr. Europe, Mediterranean Region, Asia Minor, Caucasus, Central Asia, Iran, Afghanistan, Himalaya: from Kashmir to Panjab, Peshawar).

var. **minutus** Boiss., F. O. I: 58.

Distr. Afghanistan and Pakistan.

Ceratocephalus orthoceras DC., Syst. I: 231 (1818).

Ranunculus falcatus var. *orthoceras* (DC.) Aitch. et Hemsl. in Aitch., l. c. 30 (1881).

Distr. Europe, Asia Minor, Caucasus, Central Asia, Western Siberia, Iran, Afghanistan.

Clematis aspleniifolia Schrenk, Enum. Pl. Nov. II: 68 (1842).—Boiss., 1. c. 3. —Kraschen., in Fl. SSSR VII: 317 (1937).

Distr. Central Asia and Afghanistan.

Clematis flammula L., Sp. Pl. 544 (1753).—Kraschen., 1. c. 319.

Distr. Mediterranean Region, Asia Minor, Caucasus, Iran, Afghanistan.

Clematis grata Wall., Pl. As. Rar. I: 83 (1830).—Boiss., 1. c. 4 (1856).—Hook. f. et Thoms., F. B. I: 3.—Aitch. 1. c. 29 (1881).

Distr. Afghanistan, Himalaya: from Kumaon westwards, Southern China, Formosa.

Clematis graveolens Lindl. in Jour. Hort. Soc. I: 307 (1846).—Aitch., 1. c. 29 (1881).

Distr. Himalaya: from Marri to Kulu, Kumaon, Afghanistan.

Clematis orientalis L., Sp. Pl. 543 (1753).—Boiss., 1. c. 3 (1865).—Aitch., 1. c. 29 (1888), pro var. *foliorum segmentis angustis*.

Distr. Eastern Europe, Asia Minor, Caucasus, Central Asia, Iran, Afghanistan, Himalaya: from Indus to Kumaon.

var. **obtusifolia** Hook. f. et Thoms., 1. c. 5.—Aitch., 1. c. 148 (1882).

Distr. Western Himalaya, Afghanistan.

Clematis Robertiana Aitch. et Hemsl. in Aitch., 1. c. 29 (1881), et 1. c. 148 (1882).

Distr. Afghanistan.

Clematis vitalba L., Sp. Pl. 544 (1753).

var. **syriaca** Boiss., 1. c. 4 (1856).

Nuristan: Between Voma and Trokikori (Jul. 31, 1855 S. K.).

Distr. Syria, Afghanistan.

Consolida orientalis (J. Gay) Schröding. in Abh. Zool.-Bot. Ges. Wien IV-5: 8 (1909).

Delphinium orientale J. Gay ex Desmoul, Cat. Dord. 12 (1839).—Aitch., 1. c. 30 (1888).—Huth, in Engl. Bot. Jahrb. XX 375 (1895).

Distr. Europe, Mediterranean Region, Asia Minor, Caucasus, Central Asia, Iran, Afghanistan.

Consolida persica (Boiss.) Schröding., 1. c. 17 et 62.

D. persicum Boiss. in An. Sci. Nat. XVI: 362 (1841), et F. O. I: 76.—Aitch., 1. c. 30 (1888).—Huth, 1. c. 370.—Nevski, in Fl. SSSR VII: 111 (1937).

Between Doab and Pulikhumri (Jun. 26, 1955 S. K.).

Distr. Caucasus, Iran, Afghanistan.

Consolida rugulosa (Boiss.) Schröding. in An. Nat. Hofmus. XXVII: 43 (1913).

D. rugulosum Boiss., 1. c. 361 (1841).—Aitch., 1. c. 30 (1888).—Huth, 1. c. 371.

Between Pulikhumri and Haibak (Jun. 27, 1955 S. K.).

Distr. Caucasus, Central Asia, Iran, Afghanistan.

The stem of one of our two plants which were collected at the same time is covered with both short curved and long patent hairs, the follicles are slightly appressed and legume-shaped, covered with patent hairs, and about 20 mm long and hardly or little exceeding the bract at least on the lower part. This belongs clearly to *C. rugulosa*. While the stem of the other is covered with curved hairs only. The follicles are cylindric and almost straight, covered with curved hairs, and 23–28 mm long and exceeding the bract. The latter is rather near to *C. leptocarpa* Nevski. Perhaps both species cannot be distinguished clearly each other.

Consolida Stocksiana (Boiss.) Nevski, l. c. 111.

D. Stock. Boiss., Diagn. Ser. II, II: 12 (1853).—Huth, l. c. 373.—Nevski, l. c. 111.

Between Kabul and Sarobi (June 15, 1955 S. K.), Charikar (June 23, 1955 S. K.).

Distr. Central Asia: Pamiro-Alai, Turkmania, Iran, Afghanistan.

var. **glabrescens** (Boiss.) Tamura comb. nov.

D. Stock. var. *glabr.* Boiss., l. c. 77 (1856).

Charikar (Jun. 23, 1955 S. K.).

Distr. Afghanistan.

var. **kabulianum** (Akhtar) Tamura stat. nov.

D. kabulianum Akhtar in Kew Bull. 86 (1938).

Distr. Afghanistan.

Consolida Stocksiana is fairly variable in stature. This plant seems to be a extremely small form of this species.

Delphinium afghanicum Rech. in Anz. XCI: 74 (1954).

Distr. Afghanistan.

Delphinium Brunonianum Royle, Ill. Bot. Himal. 56 (1839).—Aitch., l. c. 31 (1881).—Huth, l. c. 382.

Distr. Himalaya: Kashmir, Lahul, Kumaon, Central Asia: Pamir, Schgnan, Afghanistan.

Delphinium cyphoplectum Boiss., Diagn. Ser. I. VI: 7 (1845).—Huth, l. c. 427.

Distr. Caucasus, Iran, Afghanistan.

Delphinium griseum Gilli in Fedde, Rep. LVII: 96 (1955).

Distr. Afghanistan.

Delphinium latisquameum Gilli, l. c. 94, Abb. 1.

Distr. Afghanistan.

Delphinium minjanense Rech. f., l. c. 73 (1954).

Distr. Afghanistan.

Delphinium nuristanicum Tamura in Acta Phytotax. Geobot. XVI: 141 (1956).

Fig. 50.

Radix lignosa ca. 4~5 mm crassa. Caulis 45~75 cm altus ca. 3 mm crassus simplex vel ad inflorescentiam ramosus, praeter partem supra basalem sparse albo-

hispidam glaber. Folia radicalia (sub anthesin fere emergida) et caulina inferiora ambitu rotundato-reniformia 3~5cm longa 4~6cm lata fere ad basem tripartita, partitionibus lateralibus bipartitis, omnibus pinnatim inciso-laciniatis, laciniis lineari-lanceolatis obtusis, praesertim subtus margineque sparse albo-hispida, petiolis 6~10 cm longis. Folia caulina superiora glabra fere ad basem tripartita partitionibus lineari-oblongis integris 2~4 cm longis 2.5~5 mm latis, petiolis 1.5~3 mm longis. Racemus simplex vel inferne ramosus 8~20 cm longus in dimidia vel triente supero 5~10-florigerus, bracteis inferioribus ad 18 mm longis 1.8 mm latis, superioribus lineari-filiformibus 3~5 mm longis. Pedicelli ca. 5~12 mm longi post anthesin plus minus divaricati et elongati circa medium bibracteolati supra situm insertionis bractearum patentium viscidopilosi, pilis aureis inferne vesiculato-inflatis. Flores caerulei, calcare recto 11~12mm longo basi 2.5 mm lato apice sensim attenuato sepalis ca. 10 mm longis 3~4 mm latis toto glabris. Petala superiora glabra ca. 16 mm longa, tubulo 6 mm longo sensim attenuato; inferiora ca. 7.5 mm longa unguiculata, limbo bifido albo-barbato. Carpella 3 viscido-pilosa, pilis ut in pedicello.

Affinis *D. saniculifolio* et *D. penicillato*, sed ab hoc pedicellis superne carpellisque glanduloso-pilosis, ab illo sepalis glabris caule ramoso, racemo superne tantum florigero differt.

Nuristan: Chatrass, 2100 m (Aug. 2, 1955 S. K.).

Distr. Afghanistan.

Delphinium penicillatum Boiss. in An. Sci. Nat. XVI: 369 (1841).—Huth, 1. c. 426.

Distr. Iran, Afghanistan.

Delphinium saniculifolium Boiss., Diagn. Ser. I, VI: 6 (1845).—Hook. f. et Thoms., 1. c. 25.—Boiss., 1. c. 91 (1851).—Huth, 1. c. 427.

Distr. Iran, Afghanistan, Pakistan.

var. ***kohatense*** Brühl in An. Roy. Bot. Gard. Calc. V-2: 95 (1896).

Nuristan: Between Voma and Chatrass (Aug. 1, 1955 S. K.).

Distr. Afghanistan.

Delphinium semibarbatum Bienert ex Boiss., 1. c. 92 (1856).—Nevski, 1. c. 182.

D. Zazil Aitch. et Hemsl. in Aitch., 1. c. 130 (1888).

Between Pulikhumri and Haibak (Jun. 27, 1955 S. K.).

Distr. Central Asia: Western Tianshan, Pamiro-Alai, Turkmania, Iran, Afghanistan.

Delphinium suave Huth, 1. c. 470.

Distr. Afghanistan.

Delphinium tenuipes Tamura in Acta Phytotax. Geobot. XVI: 141 (1956). **Fig. 51.**

Radix lignosa ca. 5 mm crassa. Caulis ca. 1m altus 3 mm crassus simplex teres erectus praeter partem supra basalem patentim albo-pilosam glaber. Folia radicalia et caulina inferiora ambitu reniformia ca. 6 cm longa 7~9 cm lata fere ad basem tripartita, partitionibus lateralibus bipartitis, omnibus cuneato-obovatis pinnatifidis, lobis

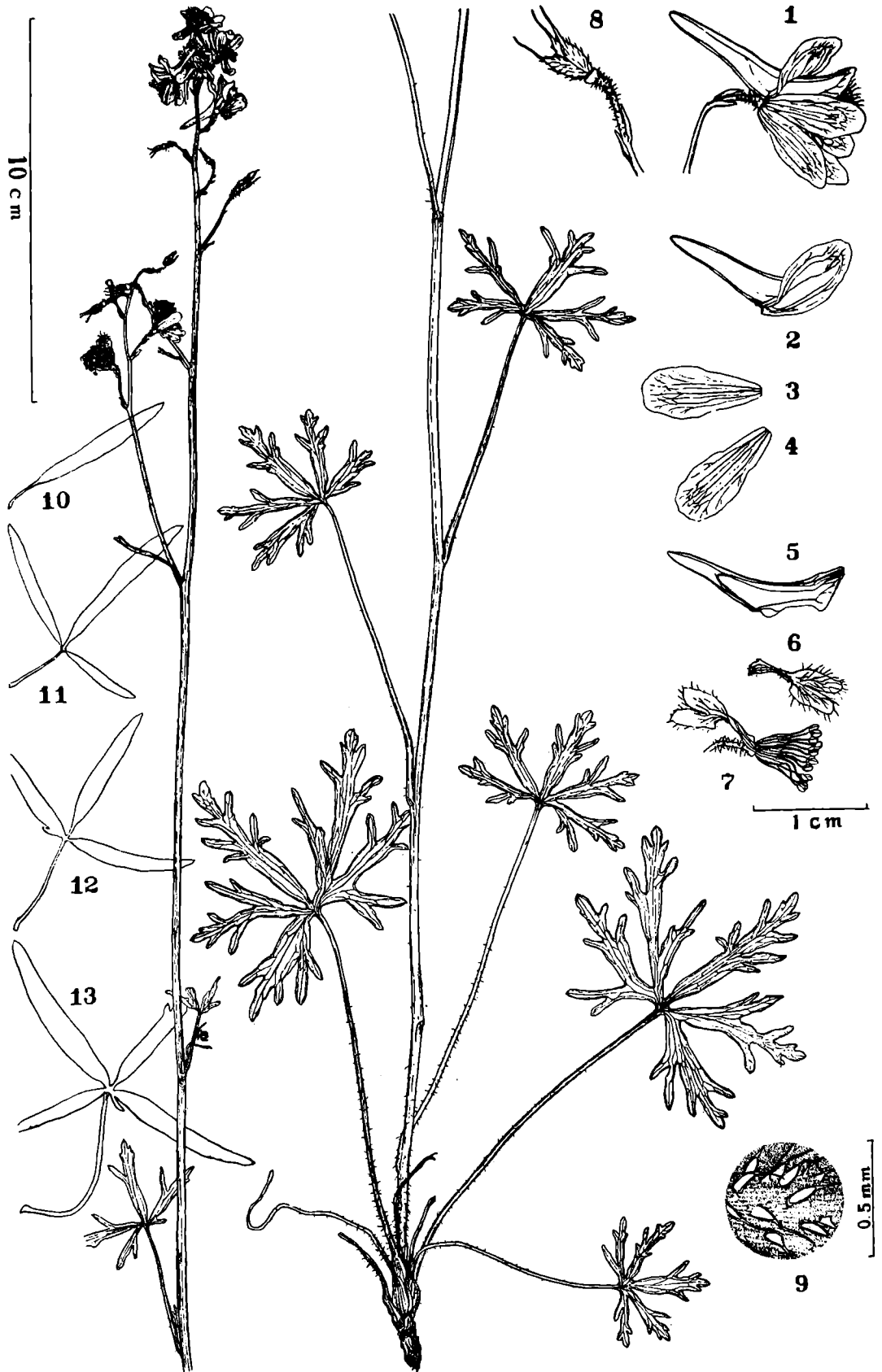


Fig. 50. *Delphinium nuristanicum* Tamura: 1 Flower, 2, 3 and 4 Sepals, 5 and 6 Petals, 7 Petal and Stamens, 8 Follicles, 9 Glandular Hairs on Pedicel, 10, 11, 12 and 13 Variation of Leaves (from Upper Cauline to Radical Leaves). (Nuristan: Chatrass).

oblongis vel ovato-oblongis acutis vel obtusis, supra glabra subtus sparse albo-hispida, petiolis 8~10 cm longis; superiora tripartita glabra, partitionibus lateralibus bipartitis, omnibus oblongis 1~3-dentatis vel integris, 4~6 cm longis 6~7 cm latis, petiolis 3~4 cm longis. Racemus inferne laxo ramosus, ramis arcuato-divaricatis, laxo ca. 22-florus, bracteis linearibus 2.5~5 mm longis. Pedicelli 15~45 mm longi graciles vix 1 mm crassi arcuato-ascendentes supra medium bibracteolati apice patentim viscido-pillosi, pilis aureis basi vesiculato-inflatis, bracteolis linearibus ca. 2 mm longis. Flores caerulei ca. 1 cm diam., calcare cylindrico infra apicem gibberulato 10~11 mm longo ca. 2 mm lato, sepalis lateralibus obovato-ellipticis 8~11 mm longis 3.5~5 mm latis, sepalis inferioribus oblongis 7~11 mm longis 2~3 mm latis, omnibus glabris. Petala superiora glabra; inferiora bifida albo-barbata. Carpella 3 viscido-pilosa, pilis ut in pedicello.

Affinis *D. lanigero*, a quo habitu minore radice vix subbulbosa calcaribus crassis pedicellis brevioribus sepalis et petalis superioribus toto glabris divergit.

Nuristan: Chatrass, 2100 m (Aug. 2, 1955 S. K.).

Distr. Afghanistan.

Delphinium tetanoplectrum Rech. f. in Anz. Österr. Akad. Wiss. math.-nat. XCI: 72 (1954).

Distr. Afghanistan.

Delphinium tuberosum Aucher ex Boiss. in An. Sci. Nat. XVI (1841) 370.—Huth, l. c. 425.

Distr. Iran, Afghanistan.

Delphinium uncinatum Hook. f. et Thoms., Fl. Ind. I: 24 (1855).—Aitch., l. c. 31 (1881).—Huth, l. c. 424.

Nuristan: Between Chatrass and Kushimaicot (Aug. 2, 1955 S. K.).

Distr. Kurdistan, Afghanistan, Himalaya: Panjab, Banahal, Marri.

Eranthis cilicica Sch. et Kot., in Österr. Bot. Wochenbl. 113 (1854).—Aitch., l. c. 30 (1888).

Distr. Cilicia, Afghanistan.

Halerpestes subsimilis (Printz) Tamura comb. nov.

Ranunculus subsimilis Printz, Veg. Sib.-Mong. Front. 236 (1921).

R. cymbalaria (non Pursh) Boiss., l. c. 52 (1856).—Aitch., l. c. 149 (1882).

R. pegeus Rech. f., l. c. 75 (1954).

Distr. Central Asia, Afghanistan, Siberia, Mongolia, China, Northern Korea.

var. **afghanica** Tamura var. nov.

Folia radicalia ambitu tetragonali vel pentagonali-ovata 7~11 mm longa 5~10 mm lata basi truncata vel subcordata vel cuneato-rotundata ultra medium trifida, segmento medio ovato integro vel obovato-cuneato, tridentato, segmentis lateralibus vix divaricatis integris vel extus 2~4-lobato-dentatis, petiolis 2~6 cm longis. Scapus 3~7 cm altus foliis aequans vel paulo superans plerumque uniflorus. Flores 7~8 mm diam. Sepala 5 elliptica ca. 4 mm longa 1.8 mm lata. Petala 5~7 ovato-oblonga ca. 3.5 mm

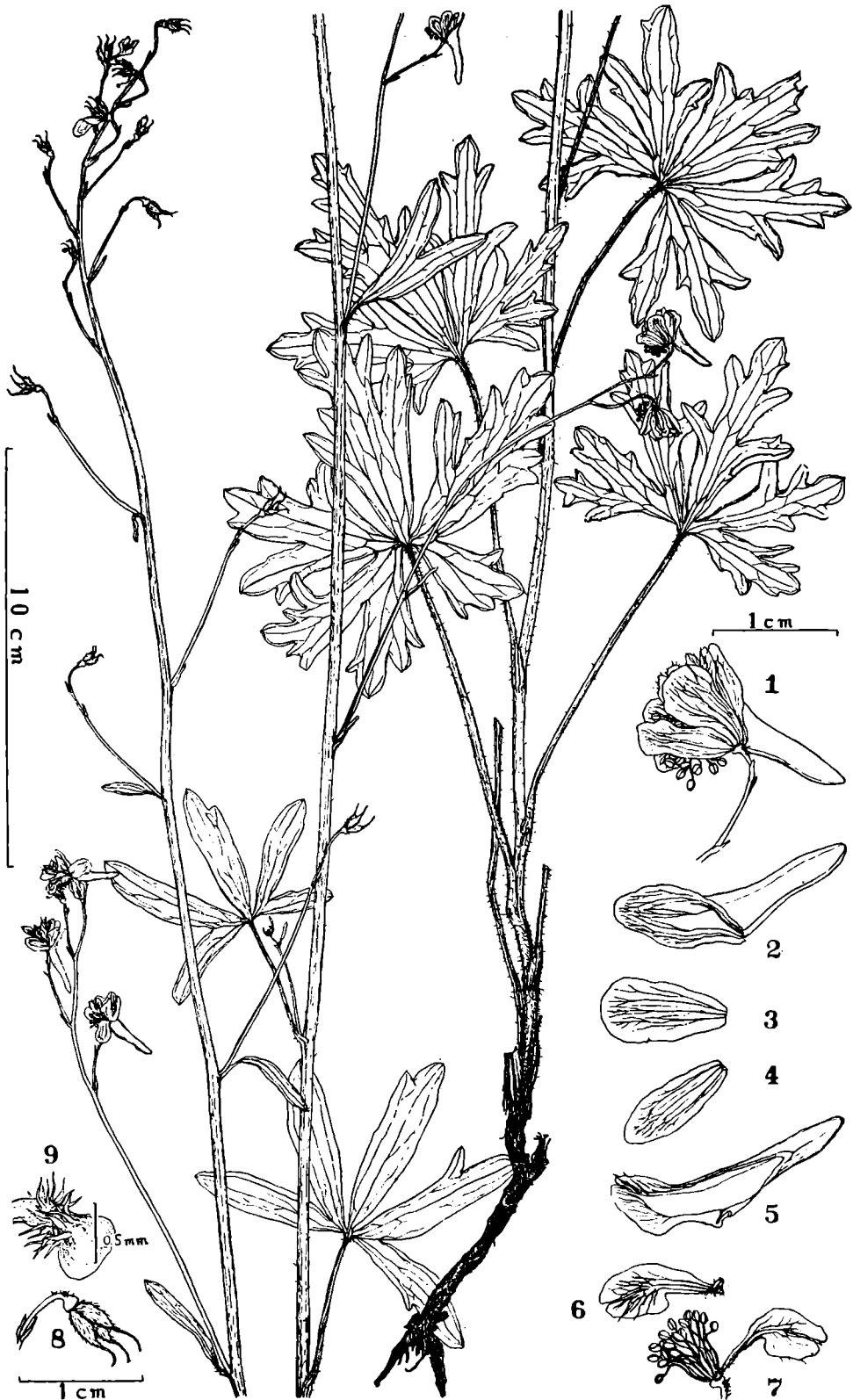


Fig. 51. *Delphinium tenuipes* Tamura: 1 Flower, 2, 3 and 4 Sepals, 5 and 6 Petals, 7 Petal and Stamens, 8 Follicles, 9 Glandular Hairs on Pedicel. (Nuristan: Chatrass).

longa 1.2 mm lata unguiculata. Capitula fructifera elliptica ca. 6.5 mm longa 5 mm lata.

Differt a typo foliis altius divisus.

Bulola (June 25, 1955 S. K.)—Typus in Herb. Univ. Kyoto.

Distr. Afghanistan.

The typical form of *H. cymbalaria* does not occur in Asia, and the plants which were identified with *Ranunculus cymbalaria* by Boissier and Aitchison may belong to this species.

Nigella integrifolia Regel, in Bull. Soc. Nat. Mosc. XLIII, I: 246 (1870).—Aitch., 1. c. 30 (1888).

Distr. Central Asia, Iran, Afghanistan.

Oxygraphis chrysocyclus Rech. f. in Anz. XCI: 74 (1954).

Distr. Afghanistan.

Paraquilegia afghanica Rech. f., 1. c. 72.

Distr. Afghanistan.

Paraquilegia anemonoides (Kar. et Kir.) Schipcz. in Not. Syst. ex Herb. Hort. Pétrap. V, no. 4 (1924).

Isopyrum anem. Kar. et Kir. in Bull. Soc. Nat. Mosc. XV: 135 (1842).—Aitch., 1. c. 30 (1881).

Paropyrum anem. (Kar. et Kir.) Ulbr., 1. c. 218.

Isopyrum thalictroides (non L.) Hook. f. et Thoms., 1. c. 43 (1872).

Distr. Central Asia: Songaria, Tarbagatai, Pamiro-Alai, Tianshan, Iran, Afghanistan, Himalaya: Kashmir, Lahul.

P. afghanica and *P. chionophila* have the caespitose habit and the leafy stems, and are the intermediates between *Paraquilegia* s. str. and this species. Therefore it is better to reduce *Paropyrum* to *Paraquilegia*.

Paraquilegia chionophila Gilli, in Fedde Rep. LVII: 97 (1955).

Distr. Afghanistan.

Paraquilegia grandiflora (Fisch.) Drum. et Hutch. in Kew Bull. 156 (1920).

Isopyrum grandifl. Fisch. ex DC., Prodr. I: 48 (1824).—Aitch., 1. c. 31 (1881).—Bornm., 1. c. 220.

Aquilegia anemonoides Willd. in Mag. Ges. Naturf. Freunde 5-jahrg. 401 (1811).

P. anem. (Willd.) Ulbr. in Notizb. Bot. Gart. u. Mus. Berl.-Dahl. IX: 209 (1925).

Distr. Altai, Central Asia: Songaria, Tarbagatai, Tianshan, Pamiro-Alai, Kashgaria, Iran, Afghanistan, Himalaya: from Kumaon to Balti, Tibet, Western Mongolia.

Paraquilegia uniflora (Aitch. et Hemsl.) Drum. et Hutch., 1. c. 158, excl. syn. *Isopyrum anemonoides* Kar. et Kir.

Isopyrum uniflorum Aitch. et Hemsl. in Aitch., 1. c. 149 (1882).—Ulbr., 1. c. 216.

Distr. Afghanistan.

Ranunculus afghanica Aitch. et Hemsl. in Aitch., 1. c. 148 (1882).—Ovcz. in Fl. URSS VII: 493 (1937).

R. divergens (non Jord.) Aitch., 1. c. 30 (1881).

Distr. Central Asia : Turkm., Pamiro-Alai, Tianshan, Afghanistan.

Ranunculus alpigenus Komar. in Tr. Soc. Nat Pétersb. XXVI : 56 (1896).—Ovcz., 1. c. 504.

Distr. Central Asia : Western Pamir, Afghanistan.

Ranunculus arvensis L., Sp. Pl. 555 (1753).—Boiss., 1. c. 57 (1856).—Hook. f. et Thoms., 1. c. 20 (1872).—Aitch., 1. c. 30 (1881), et 1. c. 30 (1888).—Bornm., 1. c. 220.

Between Kabul and Sarobi (Jun. 15, 1955 S. K.), Shibar Pass (Jun. 24, 1955 S. K.).

Distr. Europe, Mediterranean Region, Caucasus, Central Asia : Turkm., Amu-Dar., Syr-Dar., Pamiro-Alai, Iran, Afghanistan, Himalaya : from Kashmir to Kumaon.

Ranunculus Aucheri Boiss. in An. Soc. Nat. Sér. 2, XVI : 351 (1841).—Aitch., 1. c. 149 (1882).

Distr. Iran, Afghanistan.

Ranunculus demissus DC., Syst. Nat. I : 275 (1818).—Aitch., 1. c. 149 (1882).

Distr. Mediterranean Region, Asia Minor, Iran, Afghanistan.

Ranunculus hirtellus Royle, 1. c. 53.—Aitch., 1. c. 149 (1882).

Distr. Himalaya, Western China, Afghanistan.

var. **leiocarpa** Tamura var. nov.

R. hirtellus (non Royle) Hook. f. et Thoms., 1. c. 18, p. p.—Tamura et Kitam., in Faun. Fl. Nepal Himal. 130 (1955), p. p.

Caulis plerumque uniflorus praeter pedicellos superne adpresse albo-pilosos glaber. Folia glabra. Carpella ultra 60 in numero, glabra, stylis elongatis ad 1 mm longis fere erectis.

Nuristan : Shabul Gul (Aug. 6, 1955 S. K.)—Typus in Herb. Univ. Kyoto.

Distr. Western Himalaya, Afghanistan.

This plant differs from *R. hirtellus* Royle in having many glabrous carpels with the long straight style.

Ranunculus Koelzii Rech. f. in Anz. Österr. Akad. Wiss., math.-nat. XCI : 75 (1954).

Distr. Afghanistan.

Ranunculus laetus Wall. ex Hook. f. et Thoms., 1. c. 19.—Aitch., 1. c. 30 (1881)

R. pathanorum Rech. f., 1. c. 76.

Nuristan : Charikar (Jun. 23, 1955 S. K.), Chardeh-Chorband (Jul. 11, 1955 S. K.), Voma (Jul. 30, 1955 S. K.), between Voma and Chatrass (Aug. 1, 1955 S. K.).

Distr. Himalaya, Afghanistan.

Ranunculus leptorrhynchus Aitch. et Hemsl. in Aitch., 1. c. 29 (1888).—Bornm., 1. c. 220.—Ovcz., 1. c. 503.

Distr. Central Asia : Turkm., Syr-Dar., Pamiro-Alai, Iran, Afghanistan.

Ranunculus lomatocarpus Fisch. et Mey., Ind. Sem. Horti Petrop. I : 36 (1835).

Kandahar (Jun. 6, 1955 S. K.).

Distr. Eastern Mediterranean Region, Caucasus, Iran, Afghanistan.

Ranunculus minjanensis Rech. f. in Anz. Österr. Acad. Wiss., math.-nat. XCI : 76 (1954).

Distr. Afghanistan.

Ranunculus muricatus L., Sp. Pl. 555 (1753).

var. **leiodiscus** Boiss., l. c. 57 (1856).

R. cabulicus Boiss., Diagn. Ser. II, I : 9 (1853).

Distr. Iran, Afghanistan.

Ranunculus pulchellus C. A. Mey. in Ledeb., Fl. Alt. II : 333 (1830).—Boiss., l. c. 52 (1856).—Hook. f. et Thoms., l. c. 19.

Distr. Siberia : Altai, Angara-Sajan, Dahuria, Central Asia : Sungaria, Tarbagatai, Afghanistan, Himalaya : from Sikkim westwards, Tibet, Northern Mongolia, Western China.

Ranunculus Steveni Andrz. ex Bess., Enum. Pl. Vorh. 22 (1821).—Bornm., l. c. 220.

Distr. Europe, ? Afghanistan.

Thalictrum alpinum L., Sp. Pl. 545 (1753).

Nuristan : Shabul Gul (Aug. 6, 1955 S. K.).

Distr. Europe, Caucasus, Central Asia : Dz.-Tarb., Tianshan, Pamiro-Alai, Siberia, Afghanistan, Himalaya, China, Japan, Northern Kuriles, Northern America.

Thalictrum isopyroides C. A. Mey. in Ledeb., Fl. Alt. II : 346 (1830).—Boiss., l. c. 6 (1856).—Aitch., l. c. 29 (1888).

Distr. Mediterranean Region, Caucasus, Western Siberia, Central Asia : Turkm., Pamiro-Alai, Tianshan, Afghanistan, Himalaya.

Thalictrum pedunculatum Edgew. in T. L. S. XX : 27 (1846).—Boiss., l. c. 6 (1856).

Distr. Himalaya : Garwal, Kumaon, Kasia hills, Afghanistan.

Thalictrum minus L., Sp. Pl. 546 (1753).

var. **flexuosum** Benth. ex Aitch., l. c. 30 (1881).

T. flexuosum Benth. ex Reichb., Fl. Germ. Exc. 728 (1830-2).

Distr. Europe, Afghanistan.

var. **glandulosum** Koch, Syn. Fl. Germ. et Helv. 4 (1837).

Distr. Europe, Afghanistan.

var. **majus** (Jacq.) Hook. f. et Thoms., l. c. 14.—Aitch., l. c. 148 (1882).

T. majus Jacq., Fl. Austr. V : 9 (1778).—Murr. in L., Syst. Veg. ed. 14, 513 (1784).—Boiss., l. c. 7 (1856).

Distr. Europe, Siberia, Caucasus, Iran, Afghanistan.

var. **pubescens** Tamura var. nov.

Planta robusta ca. 150 cm alta superne bene ramosa. Folia triternata, foliolis ca. 3.3 cm longis 2.7 cm latis basi truncatis vel subcuneatis supra laevibus subtus nervis

prominentibus utrinque minute pubescentibus.

Between Doab and Shibar (Aug. 10, 1955 S. K.)—Typus in Herb. Univ. Kyoto.

Distr. Afghanistan.

Thalictrum parvulum Rech. f. in Anz. Österr. Acad. XCI: 72 (1954).

T. afghanicum Gilli in Fedde, Rep. LVII: 96 (1955).

Distr. Afghanistan.

Berberidaceae

Berberis asiatica Roxb., ex DC. Syst. II: 13 (1821), Deless., Icon. Sel. II, t. 1. —Boiss., F. O. I: 957.—Hooker f., F. B. I. I: 110.—Schneider, Handb. Laubholz. I: 299 (1904).

Distr. Afghanistan, Himalaya: Garwal to Bhutan, Behar.

Berberis cretica L., Sp. Pl. 331 (1753).—Aitchison, J. L. S. XVIII: 31 (1880). —Schneider, Handb. Laubh. I: 308, Fig. 194 e-f.

Berberis vulgaris var. *cretica* Hooker f. et Thoms., F. B. I. I: 109 (1872).

Distr. Eastern Mediterranean Region, Afghanistan, Pakistan, Himalaya: to Garwal

Berberis calliobotrys Aitch. (non Bienert) ex Schneider, Ill. Handb. I: 310, Fig. 199 a-b. (1904).

Berberis vulgaris var. Aitch., J. L. S. XIX: 150.

Berberis calliobotrys Aitch. (non Bienert ex Herb. Bunge nom. nud.), J. L. S. XVIII: 31 (1880).

Distr. Pakistan: Kuram, Swat Himalaya.

Berberis nummularia Bunge in Arbeit. naturf. Verg. Riga 1: 130 (1847).—Schneider, Handb. Laubholz. I: 307.—Rehder, Manual 2 ed. 236 (1941).—B. Fedtsch. in Fl. URSS VII: 559 (1937).

var. **afghanica** Kitamura var. nov.

Folia spathulata 2.5–5 cm longa 8–16 mm lata apice obtusa breviter spinulosa basi in petiolum longe attenuata margine plerumque argute serrata rarissime subintegra, utrinque reticulato-nervosa subtus sub lente papillosa, textura chartacea. Racemus sessilis densiflorus 1.5–2.8 cm longus, pedicellis 4–5 mm longis.

A var. *pyrocarpa* racemo sessili, foliis argute serratis distinguenda.

Bulola (June 25, 1955 S. K.).

Distr. sp. Tianshan, Pam.—Al., Iran, Afghanistan.

Berberis orthobotrys Bienert apud Aitch., J. L. S. XVIII: 150 (1880) nom. nud.—Schneider, Handb. Laubh. I: 310, Fig. 1900 c-g.

Nuristan: Shabul Gul (Aug. 6, 1955, S. K.), between Pushuki and Kushitaki (Aug. 4, 1955 S. K.).

Distr. Afghanistan, Pakistan: Swat Himalaya.

Berberis vulgaris L., Sp. Pl. I: 330 (1753).—Aitch., J. L. S. XIX: 150.—Aitch., T. L. S. n. III: 31.—Schneider, Handb. Laubh. I: 315.—B. Fedtsch. in Fl. URSS

VII: 556 (1937). Reich., Ic. III. t. 18.

Kabul, Dal-ul-Aman, cultivated (July 18, 1955 S. K.).

Distr. Europe, Caucasus.

The Afghan specimens reported by Aitchison may be one of other species mentioned above.

Bongardia chrysogonum (L.) Spach, Hist. des Phan. V. 8: 65 (1836).—Jaub. et Spach, Ill. Or. IV, t. 396 (1853).—Boiss., F. O. I: 99 (1867).—B. Fedtsch., l. c. VII: 552 (1937).

Bongardia Rauwolfii C. A. Mey., Verz. Pflanz. Cauc. 174 (1831).—Aitch., T. L. S. n. III: 31. Bot. Mag. t. 6244.

Distr. Balkan Peninsula, Asia Minor, Caucasus, Central Asia (common), Iran, Afghanistan (W).

Leontice Ewersmannii Bunge in Arb. Naturf. Vereins zu Riga Bd. I: 131 (1847).—Boiss., F. O. I: 100.—B. Fedtsch. in Fl. URSS VII: 546, Tab. XXXVII-4 (1937).—Nevski in Fl. et Syst. IV: 297 (1937).

Distr. Arm.-Kurd., Iran, Afghanistan, Aralo-Kasp., Pam.—Al.

Aitchison reported *Leontice leontopetalum* L. var. ? *floribus viridi-luteis minoribus* from Badghis (Afghanistan W) in T. L. S. n. III: 31.

Podophyllum Emodi Wall. ex Royle, Ill. Him. Mount. 64, 379 in nota (1839).—Aitch., J. L. S. XVIII: 32.—Hooker f. et Thom., F. B. I. I: 112.—Kitam. in Fauna and Flora of Nepal Himalaya 133 (1955). Jacquem., Voy. Bot. t. 9.

Nuristan: Between Pushuki and Kushitaki (Aug. 4, 1955 S. K.).

Distr. sp. Afghanistan (Nuristan, Kuram), Pakistan, Himalaya: from Kashmir to Sikkim, China: Yunnan (var. *chinense*).

As compared with the Nepalese specimens, the Afghan specimens are smaller and have shorter peduncles.

Papaveraceae

Corydalis (Leonticoides) **afghanica** Gilli in Fedde, Rep. LVII: 99 (1955).

Distr. Afghanistan.

Corydalis (Leonticoides) **cabulica** Gilli, l. c. 100 (1955).

Distr. Afghanistan.

Corydalis Griffithii Boiss., Diag. Ser. II, I: 15 (1854), F. O. I: 127.—Aitch., J. L. S. XIX: 151.

Distr. Afghanistan.

Corydalis meifolia Wall., Tent. Fl. Nepal. 52, t. 41 (1824-26).—Hooker f., F. B. I. I: 126.—Maxim., Fl. Tangut. t. 25, 18-21 (1889).—Aitch., J. L. S. XVIII: 32.—Fedde in Pflanzenfam. 2 ed. 17b: 131 (1936).

Distr. Pakistan (Kuram), Himalaya: Kunawar to Sikkim.

Corydalis Mocroftiana Wall., ex Hooker f. et Thom., Fl. Ind. I: 266 (1855).

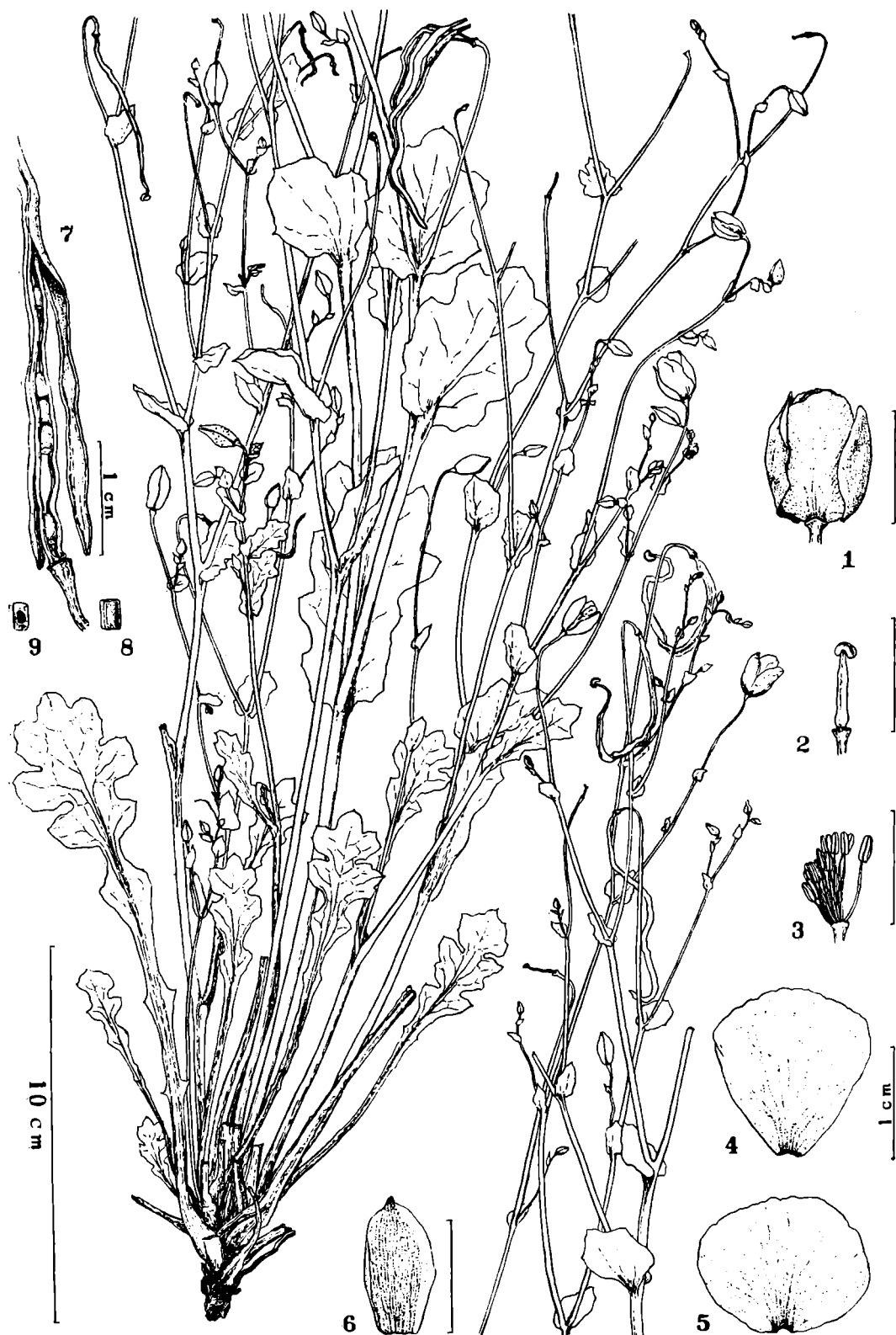


Fig. 52. *Glaucium refractocarpum* Gilli: 1 Flower, 2 Pistil, 3 Stamens, 4 Inner Petal, 5 Outer Petal, 6 Sepal, 7 Fruit, 8 Seed, 9 Transversal section of Seed. (Between Bulola and Doab).

—Boiss., F. O. I: 131.—Hooker f., F. B. I. I: 125. Gartenfl. XXXIV t. 1183.

Distr. Afghanistan, Kashmir.

Corydalis pulchella Aitch. et Hemsl., J. L. S. XIX: 151, pl. IV (1882).

Distr. Afghanistan (Kuram).

Corydalis Severzovii Regel in Bull. Nat. Mosc. XLIII, 1: 252 (1870).—Aitchison, T. L. S. n. III: 32.—Popov, Fl. URSS VII: 657. Bot. Mag. t. 6891, Gartenflora XXXI: 97, t. 1077.

Distr. Afghanistan, Tianshan, Pam.—Al.

Fumaria parviflora Lam., Encycl. Méth. II: 567 (1788).—Boiss., F. O. I: 135.—Aitch., J. L. S. XVIII: 32, T. L. S. n. III: 32.—Popov, Fl. URSS VII: 714 (1937).

Doab (June 24, 1955 S. K.), Kandahar, Arghandab (June 7, 1955 S. K.).

Distr. Europe, North Africa, Asia Minor, Caucasus, Central Asia, Iran, Afghanistan, Pakistan, India.

Glaucium refractocarpum Gilli in Fedde, Rep. LVII: 98 (1955). Fig. 52.

Glaucium afghanicum Kitamura in Acta Phytotax. Geobot. XVII: 140 (1958).

Distr. Afghanistan.

Glaucium contortuplicatum Boiss. in Ann. Sc. Nat. 2 Sér. XVI: 376 (1841), F. O. I: 121.—Fedde in Pflanzenreich, Heft 40: 231, Fig. 29 (1909).

Distr. Iran, Afghanistan.

Glaucium elegans Fischer et Mey., Ind. Sem. Horti Petrop. VII: 29 (1835).—Boiss., F. O. I: 120.—Fedde, l. c. 230 (1909).—Popov, Fl. URSS VII: 594 (1937).

Chardi-i-Ghorband (July 11, 1955 S. K.).

Distr. Armenia, Iran, Caucasus, Central Asia, Afghanistan, Dz.—Kashg.

Glaucium fimbrilligerum Boiss., F. O. I: 120.—Aitch., J. L. S. XVIII: 32.—Fedde, l. c. 228, Fig. 29 A, B. (1909).—Pop. in Fl. URSS VII: 593 (1937).

Distr. Afghanistan, Central Asia.

Hypecoum pendulum L., Sp. Pl. 124 (1753).—Boiss., F. O. I: 125.—Fedde, l. c. 95 (1909).—Pop. Fl. URSS VII: 581, Tab. XLV-2 (1937).

Hypecoum procumbens Aitch. (non L.), T. L. S. n. III: 32.

Afghanistan (1955 S. K.).

Distr. Europe, Asia Minor, Caucasus, Iran, Afghanistan, Pakistan.

Papaver croceum Ledeb., Fl. Alt. II: 271 (1830), Ic. Fl. Ross. t. 141.—Popov in Fl. URSS VII: 607.

Papaver nudicaule Boiss. (non L.), F. O. I: 107.—Aitch., J. L. S. XVIII: 151.

Papaver nudicaule subsp. *rubro-aurantiacum* (DC.) Fedde var. *trilobifolium* Fedde in Pflanzenreich Heft 40: 381 (1909) et var. *subcorydalifolium* Fedde, l. c. 382.

Distr. Altai, Ang.—Sayan, Afghanistan, Pamiro-Al., Tianshan, Dz.—Tarb., Himalaya, Mongolia, North China.

Papaver Decaisnei Hochst. et Steud. in Schimp. Pl. arab. exs. n. 125 (1835) ex

Boiss., Pl. Orient. Aucher in Ann. Sc. Nat. 2 sér, XVI: 372 (1841), F. O. I: 115.
var. **Dielsianum** Fedde in Pflanzenreich Heft 40: 344 (1909).

Distr. Sinai, Iran, Afghanistan, Pakistan.

Papaver dubium L., Sp. Pl. append. 1196 (1753).—Boiss., F. O. I: 115.—Fedde, 1. c. 313 (1909).—Pop. in Fl. URSS VII: 639 (1937).

Between Sarobi and Kabul (June 18, 1955 S. K.).

var. **laevigatum** (M. B.) Elkan, Tent. Mon. Gen. Pap. 25 (1837).—Aitch., J. L. S. XVIII: 32, T. L. S. n. III: 32.—Fedde, 1. c. 318 (1909).

Between Sarobi and Kabul (June 18, 1955 S. K.).

Distr. sp. Europe, North Africa, Asia Minor, Caucasus, Iran.

Papaver pavonicum Schrenk, Enum. Pl. Nov. II: 64 (1842).—Fischer et Mey., Ind. Sem. Horti Petr. IX: 82 (1843).—Boiss., F. O. I: 116.—Aitch., T. L. S. n. III: 32.—Popov in Fl. URSS VII: 627, Tab. XLII-4 (1937).—Gartenfl. XXXI, t. 1095.

Between Pulikhumri and Tashikurgan (June 27, 1955 S. K.), between Sarobi and Kabul (June 18, 1955 S. K.).

Distr. Central Asia (common), Afghanistan, Iran, Dz.-Kashg.

Papaver Rhoeas L., Sp. Pl. 507 (1753).—Bornm. in Engler, Bot. Jahr. LXVI: 220 (1934).

Distr. Europe, North Africa, Western Asia. The Afghan plant probably was cultivated or escaped from a garden.

Papaver somniferum L., Sp. Pl. 508.—Aitch., T. L. S. n. III: 32.

Nuristan (1955 S. K.).

Distr. Widely naturalized in the warm-temperate region of Eurasia. The native name in Afghanistan is Khok-nar. (Aitchison, 1. c.).

Roemeria hybrida DC., Syst. II: 92 (1821).—Aitch., J. L. S. XVIII: 32, T. L. S. n. III: 32.—Popov in Fl. URSS VII: 596, Tab. XL-6 (1937).

Distr. Europe, North Africa, Caucasus, Central Asia, Asia Minor, Iran, Afghanistan Dz.-Kashg.

Roemeria refracta (Stev.) DC., Syst. II: 93 (1821).—Fedde in Pflanzr. 40: 243.

Roemeria rhoeadiflora Boiss., Diag. Pl. Nov. Or. Ser. I, VI: 7 (1855), F. O. I: 119.—Aitch., T. L. S. n. III: 32.—Pop. in Fl. URSS VII: 597, Tab. XL-6 (1937). Delessert, Ic. II. 8.

Shishigar (June 10, 1955 S. K.), between Kandahar and Kabul (June 9-11, 1955 S. K.).

Distr. Caucasus, Central Asia (common), Dz.-Kashg., Iran, Arm.-Kurd., Afghanistan, Pakistan.

The 4 horns on the apex of the capsule are not distinct in our Afghan specimens.

Capparidaceae

Buhsia trinervia (DC.) B. Fedtsch. in Beih. Bot. Central. XX, II: 296 (1906).
—Fedde in Pflanzenfam. 2 ed. 17b: 209, Fig. 81.

Cadaba trinervia DC., Prodr. I: 244 (1824).

Buhsea coluteoides Boiss., F. O. I: 416.

Cleome coluteoides Boiss., Diag. Ser. I, I: 3 (1842).—Aitch., T. L. S. n. III: 38.
Distr. Transcaspia, Iran, Afghanistan.

Capparis spinosa L., Sp. Pl. 503 (1753).—Hooker f., F. B. I. I: 173.—Aitch., J. L. S. XIX: 153, T. L. S. n. III: 38.—Fedde in Pflanzenfam. 2 ed. 17b: 174, Fig. 85 A–D (1936).

Capparis spinosa L. ϵ *parviflora* Boiss., F. O. I: 420.

Istalif (June 15, 1955 H. Kihara), Kandahar (June 7, 1955 S. K.), Mazarisharif (June 30, 1955 S. K.), Nom. Afgh. Kha-warg (Aitch.).

Distr. Mediterranean Region, Iran, Afghanistan, Central Asia, Pakistan, India, Himalaya: from Kashmir to Nepal.

Cleome Griffithiana Rech. f. in Anz. Math.-Natur. Österr. Akad. Wissch. 1950, II: 2.

Distr. Afghanistan.

Cleome heratensis Bunge et Bienert ex Boiss., F. O. I: 412 (1867).

Distr. Afghanistan.

Cleome quinquenervia DC., Prodr. I: 239 (1824).—Fedde, l. c. 211.

β . *mollis* Boiss., F. O. I: 415.

Distr. Iran, Afghanistan.

Cleome ornithopodioides L., Sp. Pl. 672 (1753).—Boiss., F. O. I: 411.

Cleome iberica DC., Prodr. I: 240 (1824).—Aitch., J. L. S. XIII: 35.

Charikar (June 22, 1955 S. K.).

Distr. Eastern Mediterranean Region, Iran, Afghanistan, Pakistan.

Cruciferae

Aethionema apterocarpum Rech. f. et Aell., Phyton III: 49 (1951).—Rech. f., l. c. 26.

Distr. Afghanistan.

Aethionema carneum (Soland.) Fedtsch. in Flora Zap. Tian-Shan no° 176 (1905).—Busch in Fl. URSS VIII: 563, Tab. XXXI-2 (1939).—Rech. f., l. c. 26.

Thlaspi carneum Soland. in Russel Aleppo 257 (1794).

Aethionema cristatum DC., Syst. II: 560 (1821).—Deless., Ic. II, t. 74 (1823).—Boiss., F. O. I: 352.—Aitch., T. L. S. n. III: 36.

Distr. Syria, Armenia, Caucasus, Central Asia, Iran, Afghanistan, Pakistan.

Alliaria officinalis Andrz. ex DC., Syst. II: 489 (1821).—Boiss., F. O. I: 212.
—Rech. f., l. c. 47.

Sisymbrium Alliaria Scop., Fl. Carn. 2 ed. II: 26 (1772).—Hooker f. et Ands., F. B. I. I: 151.—Aitch., J. L. S. XVIII: 34.—Busch, l. c. 31.

Distr. Europe, Asia Minor, Armenia, Caucasus, Central Asia, Iran, Pakistan: Kuram, Abbottabad (Mar. 8, 1952 O. Suzuka), Himalaya: from Kashmir to Kumaon.

Alyssum campestre L., Syst. 10 ed. 1130 (1789).—Boiss., F. O. I: 283.—Reich., Ic. II. 18, 4270.—Aitch., T. L. S. n. III: 33.—Bonnier, Fl. Comp. Fr. I: 83, pl. 46 Fig. 215 (1911).—Bornm. in Engler, Bot. Jahr. LXVI: 221 (1934).—Busch, l. c. 357.

Alyssum afghanicum Rechinger f. in Phytion III: (1951), Symb. Afgh. IV: 31, Fig. 10 (1959).

Lataband Pass (June 15, 1955 S. K.), between Kandahar and Kabul (June 9–11, 1955 S. K.).

Distr. Europe, Palestine, Asia Minor, Armenia, Caucasus, W. Siberia, Central Asia, Iran, Afghanistan.

Alyssum Czernjakowskiae Rech. f. in Phytion III: 54 (1951), Symb. Afgh. IV: 32 (1959).

Distr. Iran, Afghanistan.

Alyssum dasycarpum Steph. in Willd., Sp. Pl. III: 469 (1800).—Boiss., F. O. I: 285.—Busch, l. c. 358.—Rech. f., l. c. 32 (1959).

Psilonema dasycarpum C. A. Mey. in Ledeb., Alt. III: 51, Ic. F. R. t. 202.

Distr. E. Europe, Asia Minor, Caucasus, W. Siberia, Iran, Afghanistan, Pakistan, Central Asia, Dzung.—Kashg.

Alyssum desertorum Stapf in Denkschr. Akad. Wien 1886: 33.—Hegi, Ill. Fl. IV₁: 454 Fig. 874 e–m (1919).—Busch in Fl. URSS VIII: 354 (1939).—Rech. f., l. c. 32 (1959).

Alyssum minimum Willd., (non L.) Sp. Pl. III: 464 (1800).—Boiss., F. O. I: 281.—Reich., Ic. II, 18, 4268.—Aitch., J. L. S. XVIII: 33.—Hooker f., F. B. I. I: 141.

Distr. Europe, Asia Minor, Caucasus, Syria, Iran, Afghanistan, Central Asia, Siberia, Dzung.—Kashg., Mongolia, Pakistan, Himalaya: Kashmir.

Alyssum linifolium Steph. ex Willd., Sp. Pl. III: 467 (1800).—Boiss., F. O. I: 286.—Aitch., T. L. S. n. III: 33.—Rech. f., l. c. 32 (1959).

Meniocus linifolius DC., Syst. II: 325 (1821), in Deless., Ic. II: Tab. 42 (1823).—Busch, l. c. 359.

Distr. Mediterranean Reg., Caucasus, Armenia, Iran, Central Asia, W. Siberia, Afghanistan, Pakistan, Dz.—Kashg., Mongolia.

Alyssum marginatum Steud., Nom. 2 ed. I: 68 (1840).—Boiss. in Ann. Sc. Nat. XVII: 157 (1842), F. O. I: 282.—Rech. f., l. c. 32 (1959).

Distr. Sinai, Iran, Afghanistan, Pakistan.

Alyssum micranthum C. A. Mey., Index Sem. I Horti Petrop. 22 (1835).—Rech. f., Symb. Afgh. IV: 32 (1959).

Distr. Western Asia, Afghanistan.

Alyssum persicum Boiss. in Ann. Sc. Nat. 2 sér. XVII: 152 (1842), F. O. I: 279.—Aitch., J. L. S. XVIII: 33, T. L. S. n. III: 33.

Distr. Iran, Afghanistan.

Anchonium elichrysifolium (DC.) Boiss., F. O. I: 240.—Rech. f., l. c. 45. Del. Ic. II, t. 84.

Distr. Afghanistan, Iran, Asia Minor.

Arabidopsis himalaica (Edgew.) O. E. Schulz, Pflanzenreich Heft 86: 283, Fig. 60 (1924).

Arabis himalaica Edgew. in Trans. Linn. Soc. XX: 31 (1846).

Sisymbrium himalaica Hooker f. et Thom. in Journ. Linn. Soc. V: 160 (1861), F. B. I. I: 147.—Aitch., J. L. S. XVIII: 34, T. L. S. n. III: 34.

Distr. Afghanistan, Himalaya: from Kashmir to Sikkim, Tibet.

Arabidopsis Kneuckeri (Bornm.) O. E. Schulz, Pflanzenreich Heft 86: 277.—Bornm. in Engler, Bot. Jahrb. LXVI: 220 (1934).

Sisymbrium Kneuckeri Bornm. in Allgem. Bot. Zeitschr. IX: 45, 127 (1904), XII: 71 t. 1, Fig. 5 (1906).

Distr. Sinai, Afghanistan.

Arabidopsis mollissima (C. A. Mey.) N. Busch, Fl. Sib. et Or. Extr. I: 136 (1913).—O. E. Schulz in Pflanzenreich Heft. 86: 280 (1924).—Rech. f., l. c. 50.

var. **afghanica** O. E. Schulz, l. c. (1924).

Distr. Afghanistan (Griff. n. 1470).

var. **Griffithiana** (Boiss.) O. E. Schulz, l. c. (1924).

Parlatoria Griffithiana Boiss., Diag. Pl. Or. Nov. Ser. II, I: 23 (1853).

Distr. Afghanistan (Griff. n. 1472).

Arabidopsis pumila (Steph.) Busch in Fl. Cauc. Crit. III, 4: 457, 465 (1909), in Fl. URSS VIII: 78 (1939).—Schulz, l. c. 277 (1924).—Rech. f., l. c. 51.

Sisymbrium pumilum Steph. ex Willd., Sp. Pl. III: 507 (1800).—Boiss., F. O. I: 213 (1867).—Aitch., T. L. S. n. III: 34.

Sisymbrium cabulicum Hooker f. et Thom. in Journ. Linn. Soc. V: 161 (1861).

Distr. E. Europe, Caucasus, Syria, Mesopotamia, Armenia, Iran, Afghanistan, Pakistan, Central Asia: Pribalx.

var. **xerophila** (Fourn.) O. E. Schulz, l. c. 278 (1924).

Distr. Afghanistan, Arabia, Palestine, Mesopotamia, Armenia, Iran, Central Asia.

Arabidopsis stricta (Camb.) Busch in Fl. Cauc. Crit. III, 4: 457 (1909).—Schulz in Pflanzenreich Heft 86: 252 (1924).

Malcolmia stricta Camb. in Jacquem., Voy. Ind. Bot. IV: 16, t. 16 (1844).

Sisymbrium strictum Hooker f. et Anders. in F. B. I. I: 149.—Aitch., J. L. S. XVIII: 34.

Distr. Pakistan: Kuram and Northern part, Himalaya: from Kashmir to Kumaon.

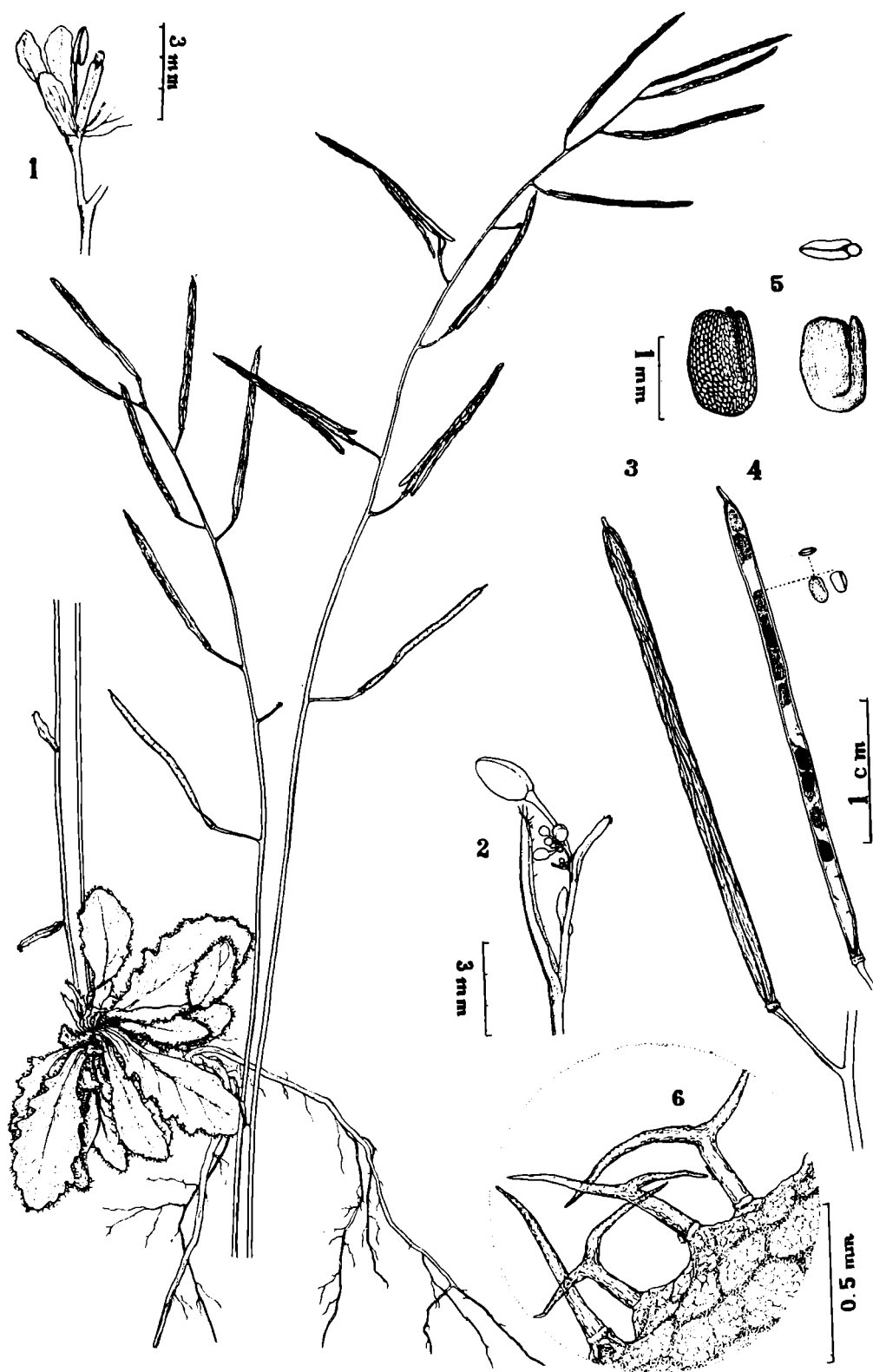


Fig. 53. *Arabis nuristanica* Kitam.: 1 Flower, 2 Flower buds, 3 and 4 Siliquae, 5 Seeds, 6 Hairs of Leaf. (Nuristan).

Arabidopsis Thaliana (L.) Heynhold in Holl et Heynh., Fl. Sachs. I: 538 (1842).—Thell. in Hegi, Ill. Fl. IV, : 392, t. 135, fig. 9 (1919).—Schulz, l. c. 270 (1924).—Busch, l. c. 77 (1939).—Rech. f., l. c. 51.

Sisymbrium Thalianum J. Gay et Monnard in Ann. Sc. Nat. Bot. 1 sér. VII: 399 (1826).—Boiss., F. O. I: 214 (1867).—Hooker f. et Anders., F. B. I. I: 148.

Distr. Eurasia.

Arabidopsis Wallichii (Hooker f. et Thoms.) Busch in Fl. Cauc. Crit. III 4: 457 (1909).—Schulz, l. c. 276 (1924).

Sisymbrium Wallichii Hooker f. et Thoms. in Journ. Linn. Soc. Bot. V: 158 (1861), F. B. I. I: 149.—Boiss., F. O. I: 215.—Aitch., J. L. S. XVIII: 34, T. L. S. n. III: 34.

Distr. Afghanistan, Himalaya: from Kashmir to Kumaon.

Arabis amplexicaulis Edgew. in Trans. Linn. Soc. XX: 31 (1851).—Hooker f. et Anders., F. B. I. I: 136.—Aitch., J. L. S. XVIII: 33.—Schulz in Notiz. Berl.-Dahlem IX: 1062 (1927).

Distr. Pakistan (Kuram etc.), Himalaya: from Kashmir to Kumaon.

Arabis bucharica (Lipsky) Busch in Fl. URSS VIII: 188, Tab. X-1 (1939).—Rech. f., l. c. 36.

Distr. Afghanistan, Central Asia.

Arabis Griffithiana Jafri in Notes Bot. Gard. Edinb. XXII: 100 (1956).

Distr. Afghanistan.

Arabis Montobretiana Boiss. in Ann. Sc. Nat. 1842: 53, F. O. I: 169.—Busch, l. c. 184 (1939).—Rech. f., l. c. 36.

Distr. Asia Minor, Syria, Palestine, Iran, Afghanistan, Central Asia.

Arabis nuristanica Kitamura in Acta Phytotax. Geobot. XVII: 139 (1958).
Fig. 53.

Radix incrassata perpendicularis parce ramosa. Caulis in fructu 30–50 cm altus erectus teres glaber purpurascens 0.7–1.2 mm diametro simplex vel supra medium parce ramosus. Racemi demum 2.5–14 cm longi ebracteati, 3–15-flori. Folia radicalia dense rosulata, obovato-oblonga vel oblanceolato-oblonga 2–4.5 cm longa 8–11 mm lata apice obtusa basi sensim angustata late alato-petiolata utrinque facie glabra, margine subintegra vel obtuse dentata, pilis bifurcatis et pilis simplicibus numerosis praedita, textura chartacea in sicco, leviter purpurascentia. Folia caulina pauca remote disposita, 3–4, parva linearia 4–22 mm longa 1–3 mm lata apice obtusa basi sessilia non amplexicaulia utrinque glabra margine integra vel parce dentata, rarius ad marginem sparse pilosa. Siliqua ascendens compressa stricta 30–35 mm longa 1 mm lata, valvis glabris reticulato-nervosis, costis mediis distinctis, pedicellis 6–8 mm longis ascendentibus vel divaricatis. Stylus 0.5 mm longus. Semina uniseriabilia oblonga compressa fusco-brunnea 1 mm longa angustissime marginata (alis 0.1 mm latis), facie glabra, sub lente reticulata. Cotyledones accumbentes.

Nuristan, loco speciali destituto (Aug. 1955 S. K.)—Typus in Herb. Univ. Kyoto.
Distr. Afghanistan.

This species is characterized by the radical leaves with bifurcate and simple hairs only on their margin, while both surfaces being quite glabrous. The writer missed the precise locality in Nuristan, probably it may be Shabul Gul about 3800 m alt.

Arabis pterosperma Edgew. in Trans. Linn. Soc. XX: 33 (1851).—Schulz in Notiz. Berl.-Dahlem IX: 1063 (1927).

A. alpina Hooker f. et Thoms. (non L.) in Journ. Linn. Soc. V: 141 (1861), F. B. I. I: 135.—Aitch., J. L. S. XIX: 152.—Kitamura, Fauna and Flora of Nepal Himalaya 138 (1955).

Distr. Afghanistan (?), Pakistan, Himalaya: from Kashmir to Nepal, Alpine Formosa.

Arabis scaposa O. E. Schulz in Notiz. Bot. Gart. Berl.-Dahlem IX: 1065 (1927).
Distr. Afghanistan (Kuram Aitch. n. 822).

Arabis taraxacifolia Anders. in F. B. I. I: 136 (1872).—Aitch., J. L. S. XVIII: 152.—Schulz in Notiz. Bot. Gart. Berl.-Dahlem IX: 1066 (1927).

Distr. Afghanistan (Kuram), Pakistan.

Arabis tenuisiliqua Rech. f. et Köie in Anz. Österr. Akad. Wiss. math.-naturw. Kl. 1954, 7: 5, Symb. Afgh. IV: 36, Fig. 13 (1959).

Distr. Afghanistan.

Arabis tibetica Hooker f. et Thoms. in Journ. Linn. Soc. V: 143 (1861), F. B. I. I: 136.—Rech. f., l. c. 37.

Distr. Afghanistan, Kashmir.

Atelanthera contorta Gilli in Fedde, Rep. LVII: 225 (1955).—Rech. f., l. c. 45.
Distr. Afghanistan.

Barbarea plantaginea DC., Syst. II: 208 (1821).—Boiss., F. O. I: 183.—Rech. f., l. c. 35.

Distr. Caucasus, Asia Minor, Syria, Arm.-Kurd., Iran, Afghanistan.

Barbarea vulgaris R. Br., Hort. Kew 2 ed. IV: 109 (1812).—Boiss., F. O. I: 183.—Hooker f. et And., F. B. I. I: 134.—Aitch., J. L. S. XVIII: 33, T. L. S. n. III: 33.—Hegi, Ill. Fl. IV₁: 301, Taf. 132, Fig. 3c (1919).—Busch in Fl. URSS VIII: 132 (1935).

Nuristan: Eschtaway (Aug. 5, 1955 S. K.).

Distr. Eurasia, North Africa.

var. **arcuata** (Opiz) Fries, Nov. Fl. Suec. 205 (1828).—Jackson in Journ. Bot. LIV: 207 (1916).—Hegi, Ill. Fl. IV₁: 302, Fig. 799 e, f (1919).

var. **taurica** (DC.) Hooker f. et And., l. c. 134.—Aitch., J. L. S. XVIII: 33.

Barbarea arcuata Rchb., Flora V: 296 (1822).—Busch, l. c. 133.

Distr. Europe, Caucasus, Siberia, Central Asia, Afghanistan, Kashmir, Mongolia.

Brassica deflexa Boiss. in Ann. Soc. Nat. Bot. 2 sér. XVII: 87 (1842).—Jafri

in Notes Bot. Gard. Edinb. XXII: 103 (1956).—Rech. f., l. c. 13 (1959).

Distr. Afghanistan (Kandahar), Iran, Pakistan, Syria, Iraq, Arabia.

Brassica elongata Ehrh. var. **armoracioides** (Czern.) Schmalh., Fl. Mittel-und Süd-Russl. I: 80 (1895).—Schulz in Pflanzenreich Heft 70: 53 (1919).—Rech. f., l. c. 13.

Distr. var. Eastern Europe, Caucasus, Central Asia, Afghanistan.

Brassica iranica Rech. f., Aell. et Esfand., Phytion III: 44 (1951), l. c. 13 (1959).

Distr. Afghanistan, Iran.

Brassica juncea Czern. et Coss., Conspect. Pl. Chark. 8 (1859).—Hooker f. et Anders., F. B. I. I: 157.—Schulz in Pflanzenreich Heft 86: 55 (1919).—Rech. f., l. c. 13 (1959).

Sinapis juncea L., Sp. Pl. 668 (1753).—Boiss., F. O. I: 394.

Distr. Cultivated in Afghanistan. Widely cultivated in the world.

Brassica nigra (L.) Koch in Röhling's Deutsch. Fl. 3 ed. IV: 317 (1833). — Boiss., F. O. I: 390.—Hooker f. et Anders., F. B. I. I: 156.—Schulz in Pflanzenreich Heft 86: 76, Fig. 14 A-D (1919).—Sinskaja in Fl. URSS VIII: 466 (1939).

Cultivated in Bot. Gard. Kyoto University, seeds from Charikar (native name Owry), Mazarisharif (Auri), Kandahar (Auli).

Distr. A native of Mediterranean Region.

The seeds are used as spice for pickles in Mazarisharif. The plants are glabrous. This species is distinguished from *B. juncea* by the short pod and the short peduncle, and is not usually cultivated in Eastern Asia.

Brassica Rapa L., Sp. Pl. 666 (1753).—Boiss., F. O. I: 391.

Brassica campestris L., l. c. 666. var. *rapa* (L.) Hartm., Hand. Skand. Fl. 6 ed. 110 (1854).—Hooker f. et Anders., F. B. I. I: 156.—Aitch., T. L. S. n. III: 35 (subsp.).

Cult. in Bot. Gard. Kyoto Univ. Seeds from Afghanistan, Kabul (native name Shargam), Kandahar (Shaljam), Jalalabad (Shuljam). Rechinger reported *β. campestris* from Afghanistan, in Symb. Afgh. IV: 13 (1959).

Distr. A native of Mediterranean Reg. Cult. in Afghanistan extensively. Cooked and eaten.

Brassica Rapa var. **dichotoma** (Roxb.) Kitamura in Land and Crop of Nepal Himalaya 116 (1956).

Sinapis dichotoma Roxb., Fl. Ind. III: 117 (1832).

Brassica campestris subsp. *Napus* Aitch. (non L.), T. L. S. n. III: 35.

Cult. in Bot. Gard. Kyoto Univ. Seeds from Kabul (native name Sharsham).

Distr. A race cultivated in Afghanistan, Himalayas and India. This is a short day plant in Kyoto, flowering from November to January.

The root is poorly developed. Cultivated for the oil extracted from its seeds. In the inflorescence, the buds are surrounded by flowers.

Camelina rumelica Velen. in Sitz. Boehm. Ges. Wiss. XLI: 123 (1891).—Rech. f. l. c. 52.

Distr. Europe, Asia Minor, Afghanistan.

Camelina sativa Crantz, Stirp. Austr. 1 ed. fasc. I: 14 (1762).—Aitch., T. L. S. n. III: 35.

subsp. **microcarpa** Andr. ex Hegi, Ill. Fl. Mittel. Europ. IV, : 370, Fig. 832 a, b, c (1919).

Nuristan: Between Kushimaicot and Pushuki (Aug. 3, 1955 S. K.), between Kushitaki and Pronz (Aug. 4, 1955 S. K.), between Sarobi and Kabul (June 18, 1955 S. K.).

Distr. Europe, Asia Minor, Afghanistan, Siberia to Baical Lake.

Capsella Bursa-pastoris Medic., Pflanzeng. 85 (1792).—Aitch., J. L. S. XVIII: 34.—Bornm. in Engler, Bot. Jahrb. LXVI: 221 (1934).—Vassilc. in Fl. URSS VIII: 604 (1939).—Rech. f., l. c. 27.

Nuristan: Between Kushitaki and Pronz (Aug. 4, 1955 S. K.).

Distr. Cosmopolitan.

Cardamine impatiens L., Sp. Pl. 655 (1753).—Boiss., F. O. I: 161.—Hooker f. et Anders., F. B. I: 138.—Busch in Fl. URSS VIII: 158 (1939).

subsp. **elongata** O. E. Schulz in Engler, Bot. Jahrb. XXXII: 459 (1903).—Rech. f., l. c. 35.

Distr. Eurasia.

Chalcanthus renifolius (Boiss.) Boiss., F. O. I: 212.—Rech. f., l. c. 14 (1959).

Distr. Afghanistan, Iran.

Chorispora Bungeana Fischer et Mey., Enum. Pl. Nov. Shrenk. 96 (1841).—Aitch., J. L. S. XIX: 152.—O. E. Schulz in Notiz. Berl.-Dahl. IX: 1071 (1927).—Vassilc. in Fl. URSS VIII: 315 (1939).—Rech. f., l. c. 41.

Distr. Afghanistan (Kuram), Central Asia, Alt., Dz.-Kashg.

Chorispora sabulosa Camb. in Jacq., Voy. Bot. 15 t. 15 (1844).—Boiss., F. O. I: 144.—Hooker f. et Anders., F. B. I: 167 (incl. *C. elegans*).

Ch. elegans Camb., l. c. 14.—Rech. f., l. c. 41.

Ch. elegans var. *sabulosa* O. E. Schulz in Notiz. Berl.-Dahl. IX: 1071 (1927).

Distr. Afghanistan, Pakistan, Himalaya: from Kashmir to Kunawar.

Chorispora tenella (Pallas) DC., Syst. II: 435 (1821).—Boiss., F. O. I: 143.—Schulz in Pflanzenfam. 2 ed. 17b: 566, Fig. 346, D-F (1936).—Vassilc., l. c. 316 (1939).—Rech. f., l. c. 41.

Distr. From Rumania to North China.

Christolea afghanica Rechinger f. in Anz. Öst. Akad. Wiss. Kl. math.-nat. 1954 no. 7: 64, Symb. Afgh. IV: 51, Fig. 21 (1959).

Koelzia afghanica Rech. f. in Phytion III: 59 (1951).

Distr. Afghanistan.

Christolea crassifolia Camb. in Jacq., Voy. Bot. 17 t. 17 (1844).—Busch in Fl. URSS VIII: 328, Tab. XV-3 (1939).—Jafri in Notes Bot. Gard. Edinb. XXII: 49, 56 Fig. 5 (1955).

Distr. Pam.-Al., Afghanistan, Pakistan, Himalaya: Kashmir, Kunawar.

Cithareloma Lehmanii Bunge, Cat. Hort. Dorp. 6 (1843).—Boiss., F. O. I: 238.—Aitch., T. L. S. n. III: 33.—Schulz in Pflanzenfam. 2 ed. 17b: 567, Fig. 343 G-M (1936).—Vassilc. in Fl. URSS VIII: 333 t. 21-5 (1939).

Distr. Pribalx., Kisilkum, Kara-Kum., Afghanistan (W).

Clypeola dichotoma Boiss. in Ann. Sc. Nat. s. II, XVII: 175 (1842), F. O. I: 310.—Aitch., T. L. S. n. III: 37.—Busch in Fl. URSS VIII: 367 t. XXII-4 (1939).

Distr. Armenia, Caucasus, Iran, Afghanistan.

Clypeola echinata DC., Syst. II: 328 (1821).—Boiss., F. O. I: 309.—Rech. f., l. c. 32.

Distr. Syria, Iran, Afghanistan, Pakistan.

Clypeola Jonthlaspi L., Sp. Pl. 652 (1753).—Boiss., F. O. I: 308.—Reichenb., Ic. Fl. Ger. II t. 12.—Schulz in Pflanzenfam. 2 ed. 17b: 497, Fig. 325 L-N (1936).—Busch, l. c. 365, Tab. XXII-3 (1939).—Rech. f., l. c. (1959).

Distr. Mediterranean Reg., Iran, Afghanistan, Central Asia: Aralo-Casp., Tianshan, Pam.-Al.

Clypeola microcarpa Moris ex Boiss., Diagn. Ser. I, I: 74 (1842).—Rech. f., l. c. 33.

Distr. Greece, Asia Minor, Arabia, Iran, Afghanistan.

Conringia perfoliata (C. A. M.) Busch in Fl. URSS VIII: 497 (1939).

Conringia clavata Boiss. in Ann. Sc. Nat. s. II, XVII: 84 (1842), F. O. I: 211.—Aitch., T. L. S. n. III: 35.—Schulz in Pflanzenreich Heft 84: 92, Fig. 26 A-G (1923), in Pflanzenfam. 2 ed. 17b: 397, Fig. 225 A-G (1936).—Rech. f., l. c. 14 (1959).

Sisymbrium perfoliatum C. A. Mey., Verz. d. Pflz. Cauc. 188 (1831).

Distr. Asia Minor, Caucasus, Iran, Afghanistan (W), Central Asia: Gorn.-Turkm., Amu-Dar.

Conringia orientalis (L.) Andrz. in DC., Syst. II: 508 (1821).—Dum., Fl. Berg. 123 (1827).—Boiss., F. O. I: 210.—Aitch., J. L. S. XIX: 152.—Schulz in Pflanzenreich Heft 84: 86 (1923).—Reich., Ic. Fl. Germ. II t. 61 n. 4382.—Busch, l. c. 496 (1939).—Rech. f., l. c. 14.

Distr. Europe, Asia Minor, Caucasus, Iran, Afghanistan, W. Siberia, Central Asia.

Conringia persica Boiss., Diag. Ser. I, VI: 12 (1845), F. O. I: 210.—O. E. Schulz in Pflanzenreich Heft 84: 90 (1923).—Busch, l. c. 497.—Rech. f., l. c. 14.

Distr. Armenia, Caucasus, Iran, Afghanistan.

Conringia planisiliqua Fisch. et Mey., Index III Sem. Horti Petrop. 32 (1837).—Rech. f., l. c. 14 (1959).

Distr. Asia Minor, Iran, Central Asia, Afghanistan, Kashmir.

Coronopus didymus (L.) Smith, Fl. Brit. II: 691 (1800-4).—Rech. f., l. c. 21.

Distr. Afghanistan, a native of South America, now widely naturalized.

Crambe cordifolia Stev. in Mém. Soc. Nat. Mosc. III: 267 (1872).—Boiss., F. O. I: 405.

var. **Kotschyana** (Boiss.) O. E. Schulz in Pflanzenreich Heft 70: 236 (1919).

Crambe Kotschyana Boiss., Diag. Pl. Nov. Or. Ser. I, VI: 19 (1845), F. O. I: 406.—Czern. in Fl. URSS VIII: 477, t. XXVII-1 (1939).—Rech. f., l. c. 13.

C. cordifolia sensu Hooker f. et Anders., F. B. I. I: 165.—Aitch., T. L. S. n. III: 37 t. 4.

Charikar (Apr. 17, 1952 Osamu Suzuka).

Distr. Central Asia, Iran, W. Tibet, Afghanistan, Pakistan.

Crambe orientalis L., Sp. Pl. 671 (1753).—Rech. f., l. c. 14 (1959).

Distr. Asia Minor, Syria, Iran, Afghanistan.

Cryptospora falcata Kar. et Kir. in Bull. Soc. Nat. Mosc. XV: 161 (1842).—Schulz in Pflanzenfam. 2 ed. 17b: 573, Fig. 348 A—E (1936).—Rech. f., l. c. 45.

Distr. Central Asia, Afghanistan.

Cymatocarpus pilosissimus (Trautv.) O. E. Schulz in Pflanzenreich Heft 86: 300, Fig. 64 (1924), in Notiz. Berl.-Dahlem IX: 1074 (1927).—Busch, l. c. 81.

Sisymbrium pilosissimum Trautv. in Acta Horti Petrop. IX, I: 369 (1884).

Brassica sp. Native name Gul-zard Aitch. in T. L. S. n. III: 36.

Distr. Kara-Kum., Gorn.-Turkm., Afghanistan.

Descurainia Sophia (L.) Webb ex Prantl. in Pflanzenfam. III 2: 192 (1890).—Schulz in Pflanzenreich Heft 86: 309 (1924).—Busch, l. c. 83.—Rech. f., l. c. 52.

Sisymbrium Sophia L., Sp. Pl. 659 (1753).—Boiss., F. O. I: 216.—Aitch., J. L. S. XVIII: 34, T. L. S. n. III: 34.—Reich., Ic. II, t. 74 f. 4405.

Shishigar (June 11, 1955 S. K.).

Distr. Europe, Asia, North Africa.

Diploaxis Griffithii (Hooker f. et Thom.) Boiss., F. O. I: 388 (1867).—Hooker f. et Anders., F. B. I. I: 157.—O. E. Schulz in Notiz. Berl.-Dahlem IX: 1074 (1927).—Rech. f., l. c. 13.

Brassica Griffithii H. f. et T. in Journ. Linn. Soc. V: 171 (1861).

Distr. Afghanistan, Pakistan.

Diptychocarpus strictus (Fischer) Trautv. in Bull. Soc. Nat. Mosc. XXXIII, 1: 108 (1860).—Boiss., F. O. I: 145.—Aitch., T. L. S. n. III: 33.—Schulz in Pflanzenfam. 2 ed. 17b: 567, Fig. 344 (1936).—Vassilc. in Fl. URSS VIII: 310, Tab. XVII-1 (1939).—Rech. f., l. c. 41.

Distr. Armenia, Caucasus. Iran, Afghanistan (W), Central Asia, Dz.-Kashg.

Draba affghanica Boiss. et Buser, Fl. Orient. Suppl. 55 (1888).—Schulz in Pflanzenreich Heft 89: 117 (1927), in Notiz. Berl.-Dahlem IX: 1075 (1927).—Rech.

f., l. c. 33.

D. alpina Boiss. (non L.), F. O. I: 297.—Aitch., J. L. S. XIX: 152 (1882).

Distr. Afghanistan, Himalaya: Kumaon.

var. **leiocarpa** Schulz in Pflanzenreich Heft 89: 118.

Distr. Afghanistan (Kuram).

var. **subtomentosa** Schulz, l. c.—Rech. f., l. c. 33.

Distr. Afghanistan (Kuram).

var. **rostrata** Schulz, l. c.

Draba rostrata Pohle in Fedde, Rep. Beih. XXXII: 136 (1925).—Rech. f., l. c. 33.

Distr. Afghanistan (E).

Draba Koeiei Rech. f. in Anz. Österr. Akad. Wiss. math-naturw. Kl., 1954, 7: 4, Symb. Afgh. IV: 33, Fig. 11.

Draba buddhae Gilli, Fedde, Rep. LVII: 220 (1955).

Distr. Afghanistan.

Draba Korschinskyi (O. Fedsch.) Pohle in Fedde Rep. Beih. XXXII: 134 (1925).—Rech. f., l. c. 33.

Distr. Central Asia, Afghanistan, W. Himalaya.

Draba stenocarpa Hooker f. et Thom. in Journ. Linn. Soc. V: 153 (1861).—Pohle, l. c. 11.—Schulz, l. c. 318 (1927).—Rech. f., l. c. 35.

Distr. Central Asia, Afghanistan, Pakistan, W. Himalaya.

Draba tibetica Hooker f. et Thomson in Journ. Linn. Soc. Bot. V: 152 (1861).—Tolm. in Fl. URSS VIII: 412 (1939).

var. **chitralensis** (Schulz) Jafri in Notes Bot. Gard. Edinb. XXII: 106 (1956).—Rech. f., l. c. 35.

Distr. sp. Pam.—Al., Tianshan, Pakistan, Afghanistan (Kohi Baba).

Drabopsis nuda (Bélanger) Stapf. in Denkschr. Math.-Nat. Akad. Wiss. LI: 30 (1886).—Schulz in Pflanzenfam. 2 ed. 17b: 548, Fig. 338 O. P.—Rech. f., l. c. 37.

Arabidopsis verna (C. Koch) Busch in Fl. Cauc. Crit. III, 4: 457, 460 (1909), Fl. URSS VII: 80 (1939).

Sisymbrium nudum (Bélanger) Boiss., F. O. I: 214.

Distr. Asia Minor, Armenia, Caucasus, Pribalx., Iran, Afghanistan, Himalaya: Kashmir.

Ermania flavellata (Regel) O. E. Schulz in Engler, Bot. Jahrb. LXVI: 98 (1933).—Rech. f., l. c. 37.

Distr. Central Asia, Afghanistan.

Erophila verna (L.) E. Meyer, Preuss. Pflanzengatt. 179 (1839).—Schulz in Pflanzenreich Heft 89: 345, Fig. 33. (1927).—Busch in Fl. URSS VIII: 456 (1939).—Rech. f., l. c. 35.

Erophila vulgaris DC., Syst. II: 356 (1821).—Boiss., F. O. I: 304.—Aitch., T. L. S. n. III: 33.—Hooker f. et Anders., F. B. I. I: 145.

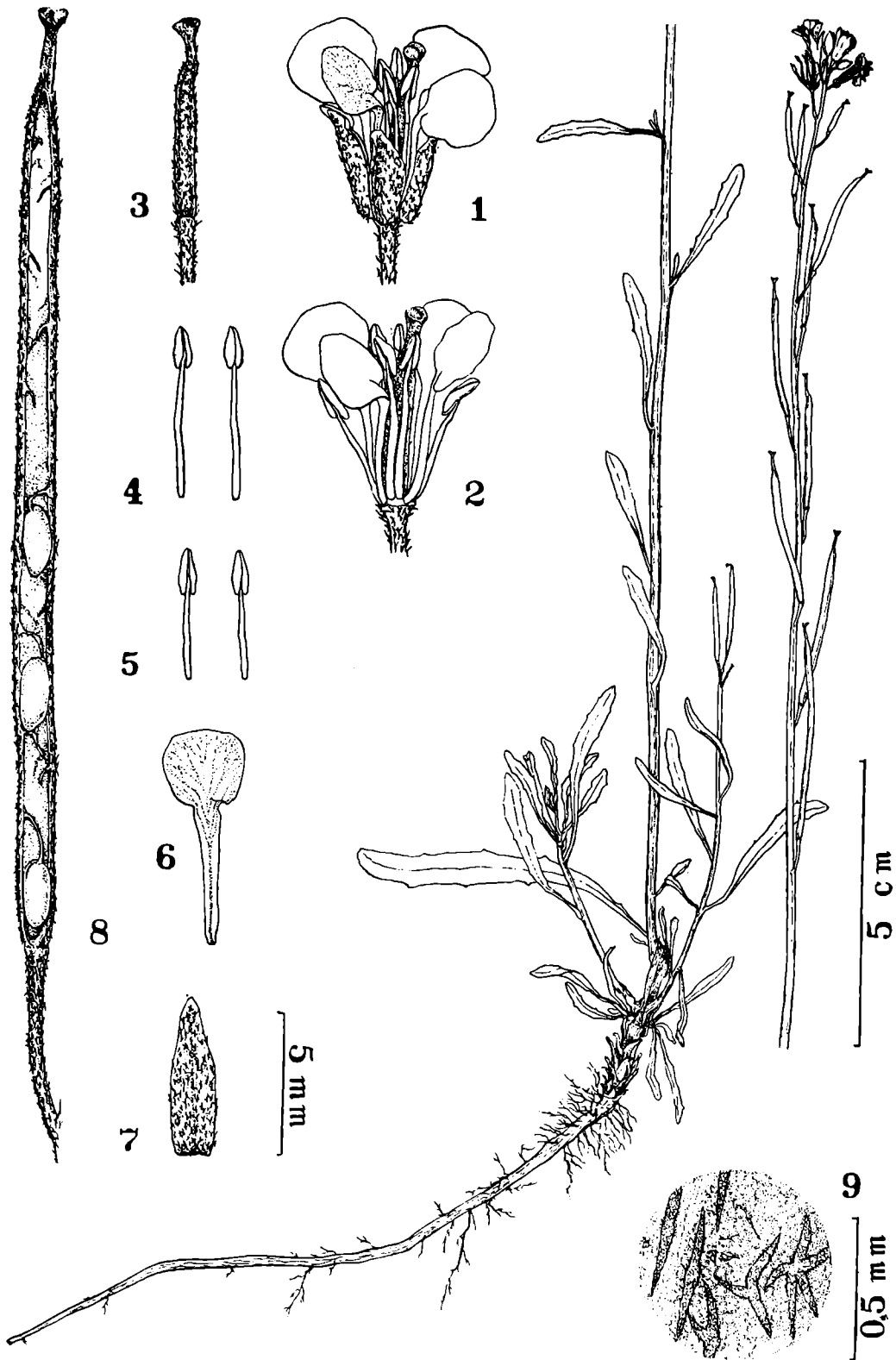


Fig. 54. *Erysimum afghanicum* Kitam.: 1 Flower, 2 Flower without Calyx, 3 Pistil, 4 and 5 Stamens, 6 Petal, 7 Sepal, 8 Siliqua, 9 Stellate Hairs on Leaf. (Nuristan: Trokikorl).

Draba verna L., Sp. Pl. 642 (1753).—Thellung in Hegi, Ill. Fl. Mitt.-Eur. IV, : 389, t. 135, Fig. 8, t. 125, Fig. 53.

Distr. Europe, Caucasus, Asia Minor, Syria, Iran, Central Asia, Afghanistan, Himalaya : Kashmir.

Eruca cappadocica Reut., Catal. Hort. Genev. 1857.—Boiss., F. O. I : 396.—Rech. f. l. c. 13.

Distr. Asia Minor, Syria, Iran, Afghanistan.

Eruca sativa Garsault, Traité pl. anim. II : 166 t. 259 (1767).—Boiss., F. O. I : 396.—Aitch., T. L. S. n. III : 36.—Schulz in Pflanzenreich 70 : 181 Fig. 25 (1919), in Pflanzenfam. l. c. 346, Fig. 189 (1936).—Sinskaja in Fl. URSS VIII : 469 (1939).—Rech. f., l. c. 13.

Kandahar (June 6, 1955 S. K.), between Haibak and Mazarisharif (June 27, 1955 S. K.), between Bulola and Doab (June 25, 1955 S. K.), Kabul, Tomb of Ex-King (July 18, 1955 S. K.).

Distr. Mediterranean reg., Caucasus, Iran, Afghanistan, Central Asia.

Erucaria lineariloba Boiss. var. **grandiflora** (Boiss.) O. E. Schulz in Pflanzenreich Heft 84 : 12 (1923).—Rech. f., l. c. 14 (1959).

Distr. Iran, Afghanistan.

Erysimum afghanicum Kitamura in Acta Phytotax. Geobot. XVI : 140 (1956). Fig. 54.

E. Gayano affinis sed a quo radicibus perennibus, foliis obtusis, stylo 1.5–2 mm longo 0.5 mm lato divergit.

Herbae perennes. Radix perpendicularis elongata fibrosa. Caulis 24–34 cm altus plerumque simplex rarius ramosus, circ. 1.5 mm in diametro viridis, pilis adpressis bipartitis vestitus. Folia radicalia sub anthesi emarcida, caulina media oblanceolata 2.5–4 cm longa 4–5 mm lata apice obtusa basi sensim angustata non amplexicaulia, margine parce denticulata utrinque pilis adpressis 2–5 partitis canescentia. Racemi elongati. Flores 11–18, pedicellis sub anthesi 2–2.5 mm longis, in fructu 4–7 mm longis. Calyx 5–6 mm longus basi saccatus pilis adpressis 2–5 partitis dense vestitus, sepalis erectis apice obtusis gibbosis. Petala flava 9 mm longa longe unguiculata, pagina obovata 3.5 mm longa 3.2 mm lata. Stamina 2 : 8 mm longa, 4 : 6.5 mm longa. Ovarium sub anthesi 7 mm longum, stylo 1.5 mm longo, stigmatibus leviter bilobis 0.5 mm longo. Siliqua erecta tetragona circ. 35 mm longa 1.2 mm lata, pilis adpressis 2–5 partitis vestita, valvis uninerviatis, stylo 1.5–2 mm longo 0.5 mm lato. Semina oblonga brunnea 1.5 mm longa. Cotyledones incumbentes.

Nuristan, Trokikorl 1500 m (Aug. 1, 1955 S. Kitamura).—Typus in Herb. Univ. Kyoto.

Erysimum Aitchisoni O. E. Schulz in Notizbl. Bot. Gart. Berl. IX : 1080 (1927).—Rech. f., l. c. 45.

Erysimum sp. Aitch., T. L. S. n. III : 35.

Distr. Afghanistan.

Erysimum Griffithianum Boiss., Diag. Ser. II, I: 28 (1854), F. O. I: 189.—Schulz in Notiz. Berl.-Dahl. IX: 1082.

Distr. Afghanistan, Iran, Pakistan.

Erysimum Griffithii (Hooker f. et Thomson) Jafri in Notes Bot. Gard. Edinb. XXII: 107 (1956).

Erysimum Hookerii Boiss., F. O. I: 203 (1867).

Cheiranthus Griffithii Hooker f. et Thomson in Journ. Linn. Soc. V: 137 (1861).

Distr. Afghanistan (Kuh-i-Baba).

Erysimum ischnostylum Freyn et Sint. in Bull. Herb. Boiss. Sér. 2, III: 570 (1903).—Rech. f., l. c. 46.

Distr. Central Asia, Afghanistan.

Erysimum Koeiei Rech. f. in Anz. Österr. Ak. Wiss. math.-naturw. Kl. 1954, 7: 5, Symb. Afgh. IV: 46, Fig. 18.

Distr. Afghanistan.

Erysimum leucanthemum (Steph.) B. Fedtsch., Fl. Zap. Tian-Shan no. 154 (1905).—Busch, l. c. 116, Tab. VI-3.—Rech. f., l. c. 47.

Erysimum versicolor Andr. ex DC., Prodr I: 198 (1824).—Boiss., F. O. I: 197.—Bornm. in Engler, Bot. Jahrb. LXVI: 270 (1934).

Cheiranthus leucanthemus Steph. ex Willd., Sp. Pl. III: 521 (1800).

Lataband Pass, Mullaomur (June 15, 1955 S. K.), Shishigar (June 11, 1955 S. K.), between Sarobi and Kabul (June 18, 1955 S. K.).

Distr. E. Europe, Caucasus, Central Asia, Iran, Afghanistan.

Erysimum Perowskianum Fischer et Mey., Index Sem. Horti Petrop. IV: 36 (1837).—Boiss., F. O. I: 189.—Hooker, Bot. Mag. t. 3757 (1840).

Kabul in park, probably cultivated (May 21, 1955 K. Yamashita).

Distr. Afghanistan, Pakistan.

Erysimum repandum L., Amoen. Acad. III: 415 (1756).—Boiss., F. O. I: 189.—Aitch., J. L. S. XVIII: 34, T. L. S. n. III: 35.—Hooker f. et Anderson, F. B. I. I: 153.—Reichenbach, Ic. Fl. Germ. II: t. 62, 4384.—Schulz in Notiz. Berl.-Dahl. IX: 1084 (1927).—Busch in Fl. URSS VIII: 116, Tab. VI-1 (1939).—Rech. f., l. c. 47.

Distr. Mediterranean Reg., Caucasus, Central Asia, Afghanistan, Himalaya: Kashmir.

Erysimum sisymbrioides C. A. Mey. in Ledeb., Fl. Alt. III: 150 (1831).—Ledeb., Ic. Fl. Ross. t. 266.—Boiss., F. O. I: 188.—Aitch., T. L. S. n. III: 35.—Busch, l. c. 124.

Distr. Asia Minor, Armenia, Iran, Central Asia, W. Siberia.

Erysimum Stocksianum Boiss., F. O. I: 199 (1867).—Rech. f., l. c. 47.

Cheiranthus Stocksianus Boiss., Diag. Ser. II, I: 19 (1854).

Distr. Afghanistan, Pakistan: Chaman Pass (May 31, 1955 S. K.).

Euclidium syriacum (L.) R. Br. in Ait., Hort. Kew. 2 ed. IV: 74 (1812).—Boiss., F. O. I: 368.—Aitch., J. L. S. XVIII: 35, T. L. S. n. III: 37.—Hooker f. et Anders., F. B. I. I: 165.—Schulz in Pflanzenfam. 2 ed. 17b: 475, Fig. 289, A–N (1936).—Vassilc. in Fl. URSS VIII: 323, Tab. XII–10 (1939).—Rech. f., l. c. 27.

Afghanistan (1955 S. K.).

Distr. Asia Minor, Armenia, Caucasus, Syria, Iran, Europe, W. Siberia, Central Asia, Afghanistan, Pakistan, Himalaya: Kashmir.

Euclidium tenuissimum (Pallas) B. Fedtschenko in Acta Horti Petrop. XXIII, 2: 379 (1904), in Bull. Herb. Boiss. sér. II, IV: 915.—Rech. f., l. c. 27.

Euclidium tataricum (Willd.) DC., Syst. II: 422 (1891).—Boiss., F. O. I: 369.—Aitch., J. L. S. XVIII: 35. —Schulz in Notiz. Berl.–Dahl. IX: 1084 (1927).

Litvinovia tenuissima (Pallas) Busch ex Vassilc. in Fl. URSS VIII: 324, Tab. XIII–16 (1939).

Distr. E. Europe, W. Siberia, Central Asia, Iran, Afghanistan, Pakistan, Dz.–Kashg.

Farsetia aegyptiaca Turra, Farset. Nov. Gen. 5, t. 1 (1765).—Hooker f. et Anders., F. B. I. I: 141.—Rech. f., l. c. 28.

β. **gracilior** Boiss., F. O. I: 159 (1867).

Sarobi (June 16, 1955 S. K.).

Distr. sp. Northern Africa to Afghanistan, Pakistan.

Farsetia Jacquemontii Hooker f. et Thom. in Journ. Linn. Soc. V: 148 (1861). Boiss., F. O. I: 158.—Schulz in Notiz. Berl.–Dahl. IX: 1085 (1927).—Jafri in Notes Bot. Gard. Edinb. XXII: 213 (1957).

Farsetia heliophyla Bunge in Cosson, Compend. Fl. Atlant. II: 227 (1884).—Rechinger f. in Phytion III: 52 (1951).

Distr. Afghanistan, Pakistan.

Farsetia linearis Decne. ex Boiss. in Ann. Sc. Nat. sér. II, XVII: 150 (1842), F. O. I: 158.—Hooker, Ic. t. 808.

Distr. Arabia, Iran, Afghanistan, Pakistan.

Fibigia afghanica Rech. f. et Köie in Anz. Österr. Akad. Wiss. math.–naturw. Kl. 1954, 7: 3, Symb. Afgh. IV: 30, Fig. 9.

Distr. Afghanistan.

Fibigia pendula (Boiss.) Boiss., F. O. I: 260 (1867).—Jafri in Notes Bot. Gard. Edinb. XXII: 109 (1956).

Fibigia membranacea Rechinger f. in Phytion III 53 (1951).

Distr. Afghanistan, Iran.

Fortuynia Bungei Boiss., F. O. I: 402 (1867).—Schulz in Pflanzenreich Heft 84: 37 (1923), in Pflanzenfam. 2 ed. 17b: 374, Fig. 207.—Rech. f., l. c. 14, (1959).

Distr. Iran, Afghanistan.

Goldbachia laevigata DC., Syst. II: 577 (1821).—Deless., Ic. II t. 81 (1823).—Aitch., T. L. S. n. III: 38.—Vassilc. in Fl. URSS VIII: 238, Tab. XX-10, 13 (1939).

Raphanus laevigatus M. B., Fl. Taur.-Cauc. II: 129 (1808).

β. **ascendens** Boiss., F. O. I: 243.—Vassilc. l. c.

Goldbachia torulosa DC., Syst. II: 577 (1821).—Aitch., T. L. S. n. III: 38.—Rech. f., l. c. 45.

G. laevigata Schulz in Pflanzenfam. 2 ed. 17b: Fig. 349.

Shishigar (June 10, 1955 S. K.).

Distr. sp. Niz.-Volg., Asia Minor, Armenia, Caucasus, W. Siberia, Iran, Central Asia, Afghanistan, Pakistan, Dz.-Kashg.

Goldbachia verrucosa Komarov in Trav. Soc. Nat. Pétersb. XXVI: 78—Rech. f., l. c. 45.

Distr.: Afghanistan, Central Asia.

Graellsia saxifragaefolia Boiss. in Ann. Sc. Nat. sér. II, XVII: 172 (1842).—Rech. f., l. c. 35.

Distr. Afghanistan, Iran.

Gynophora Weileri Gilli in Fedde, Rep. LVI: 226 (1955).—Rech. f., l. c. 47.

Distr. Afghanistan.

Heldreichia longifolia Boiss. in Ann. Sci. Nat. sér. II, XVI: 184 (1841), F. O. I: 319.—Aitch., T. L. S. n. III: 36.—Busch in Fl. URSS VIII: 594 (1939).

Distr. Gorn.-Turkm., Pam.-Al., Afghanistan (W), Iran.

Hymenolobus perpusillus (Hemsl.) Jafri in Notes Bot. Gard. Edinb. XXII: 109 (1956).—Rech. f., l. c. 27.

Hutchinsiella perpusilla (Hemsl.) O. E. Schulz in Engler, Bot. Jahrb. LXVI: 92 (1933), Pflanzenfam. 2 ed. 17b.: 446 (1936).

Hutchinsia perpusilla Hemsl., Ic. Pl. XVI t. 1599 (1887).

Distr. Afghanistan (Wakhan), Kashmir.

Hymenolobus procumbens (L.) Nutt. ex Torr. et Gray, Fl. N. Am. I: 117 (1838).—Busch, in Fl. URSS VIII: 549 (1939).—Rech. f., l. c. 27.

Hutchinsia procumbens Desv. in Journ. Bot. III: 168 (1814).

Capsella procumbens Fries, Novit. Fl. Suec. Mant. I: 14 (1832).—Reich., Ic. II t. 11 f. 4271.—Boiss., F. O. I: 340.

Kabul, West (July 22, 1955 S. K.).

Distr. Mediterranean Reg., Caucasus, Iran, Central Asia, W. Siberia, Afghanistan, Pakistan, W. Tibet, Mongolia.

Isatis Harsukhii O. E. Schulz in Notiz. Bot. Gart. Berl.-Dahl. IX: 1085 (1927).—Rech. f., l. c. 22, Fig. 5 (1959).

Pachypterigium leptoloma Rech. f. in Phytion III 47 (1957).

Distr. Afghanistan, Pakistan.

Isatis Boissieriana Reich. f. in Journ. Bot. XIV: 46 (1876), Bull. Acad. Sc. Pétersb. sér. V. IX: 424 t. 2 (1898).—Aitch., T. L. S. n. III: 37.—Busch, l. c. 220.
Distr. Syr-Dar., Afghanistan.

Isatis emarginata Kar. et Kir., Enum. Pl. Songar. no. 126 in Bull. Soc. Nat. Mosc. XV (1842).—Busch in Fl. URSS VIII: 207 (1939).—Jafri in Notes Bot. Gard. Edinb. XXII: 110 (1956).—Rech. f., l. c. 22.

Distr. Central Asia, Afghanistan, Iran.

Isatis minima Bunge, Del. Sem. Hort. Dorp. 7 (1843), Ic. Pl. Nov. Lehm. 215 t. 4, f. B (1848).—Boiss., F. O. I: 383.—Aitch., T. L. S. n. III: 37.—Bornm. in Engler, Bot Jahrb. LXVI: 271 (1934).—Busch, l. c. 222.—Rech. f., l. c. 23.

Distr. Iran, Central Asia, Afghanistan.

Isatis Stocksii Boiss., F. O. I: 376 (1867).—Jafri in Notes Bot. Gard. Edinb. XXII: 110 (1956).—Rech. f., l. c. 23, Fig. 6 (1959).

Pachypterigium macranthum Rechinger f. in Phytion III: 48 (1951).

Distr. Pakistan, Afghanistan.

Isatis tinctoria L., Sp. Pl. 670 (1753).—Boiss., F. O. I: 381.—Aitch., J. L. S. XVIII: 38.—Schulz in Pflanzenfam. 2 ed. 17b: 421, Fig. 244 (1936).—Thellung in Hegi, Ill. Fl. IV, : 193, Tab. 130–2, Tab. 125–18, 40.—Busch, l. c. 212.

Isatis Koelzii Rech. f., Phytion III: 46 (1951), Symb. Afgh. IV: 22 (1959).

Nuristan: Between Pronz and Eschtaway (Aug. 5, 1955 S. K.).

Distr. A native of S. E. Europe, Western Asia. Now widely naturalized.

Koeiea afghanica Rech. f. in Anz. Österr. Akad. Wiss. math.-naturw. Kl. 1954, 7: 3, Symb. Afgh. IV: 28, Fig. 8 (1959).

Distr. Afghanistan.

Lepidium Aucheri Boiss. in Ann. Sci. Nat. sér. II, XVII: 195 (1842), F. O. I: 354.—Aitch., T. L. S. n. III: 36.

Distr. Mesopotamia, Iran, Afghanistan, Pakistan, Central Asia.

Lepidium bupleuroides Rech. f. in Fedde, Rep. XLVIII: 36, Tab. 296, fig. 314 (1940), Symb. Afgh. IV: 15 (1959).

Distr. Afghanistan, Iran.

Lepidium cartilagineum (J. Mayer) Thellung in Hegi, Ill. Fl. Mittel.-Europ. IV: 88 (1913).—Rech. f., l. c. 15 (1959).

Lepidium crassifolium Wald. et Kit., Pl. Rar. Hang. I: 4, t. 4 (1802).—Boiss., F. O. I: 357.—Aitch., T. L. S. n. III: 36.—Schulz in Notiz. Berl.-Dahlem IX: 1086 (1927).—Busch in Fl. URSS VIII: t. XXIX–2 (1939).

Lepidium kabulicum Rech. f. in Anz. Österr. Akad. Wiss. math.-naturw. Kl. 1954, 7: 1, Symb. Afgh. IV: 16, Fig. 1 (1959).

Kabul, West (July 22, 1955 S. K.), between Bulola and Doab in swamp (June 25, 1955 S. K.).

Distr. Eastern Europe, Asia Minor, Syria, Armenia, Caucasus, Iran, Afghanistan,

Pakistan, Central Asia, Sungaria, W. Siberia.

Lepidium Draba L., Sp. Pl. 645 (1753).—Boiss., F. O. I: 356.—Aitch., T. L. S. n. III: 36.—Busch in Fl. URSS VIII: 505 t. XXVIII-3 (1939).

subsp. **chalepense** (L.) Thellung, Monogr. Lepidium 86, 88 (1906).

L. Boissieri Busch in Fl. URSS VIII: 505, Tab. XXVII-1, Addenda VII: 651 (1939).

f. **canescens** DC.; Bornm. in Engler, Bot Jahrb. LXVI: 221 (1934).

Cardaria Draba (L.) Desv. subsp. *chalepensis* (L.) O. E. Schulz; Rech. f., l. c. 22.

Kandahar (June 6, 1955 S. K.), Shibar Pass (June 24, 1955 S. K.).

Distr. Southern Europe, Mesopotamia, Iran, Central Asia, Afghanistan, Pakistan, Himalaya: Kashmir.

Lepidium latifolium L., Sp. Pl. 644 (1753).—Boiss., F. O. I: 359.—Hooker f. et And., F. B. I. I: 160.—Aitch., J. L. S. XVIII: 34, T. L. S. n. III: 36.—Hegi, Ill. Fl. IV₁: 89, Tab. 126, 4 (1919).—Busch, l. c. 515.—Rech. f., l. c. 17 (1959)—subsp. *sibiricum* Thellung.

Kabul (June 22, 1955 S. K.), Kandahar, Arghandab (June 7, 1955 S. K.).

Distr. Europe, North Africa, Asia Minor, Caucasus, Central Asia, W. Siberia, Iran, Afghanistan, Western Tibet.

Lepidium lignescens Rech. f. in Fedde, Rep. XLVIII: 37, Tab. 296, fig 3, Tab. 314, fig. 8 (1940), Symb. Afgh. IV: 17 (1959).

Distr. Afghanistan, Iran.

Lepidium perfoliatum L., Sp. Pl. 643 (1753).—Boiss., F. O. I: 362.—Aitch., T. L. S. n. III: 36.—Hegi, Ill. Fl. IV₁: 87, Fig. 753 e, f (1919).—Busch, l. c. 512.—Rech. f., l. c. 191 (1959).

Distr. Europe, Asia Minor, Syria, Caucasus, Central Asia (common), Iran, Afghanistan, W. Siberia: Altai, Irt.

Lepidium persicum Boiss. in Ann. Sc. Nat. sér. II: XVIII: 196 (1842), F. O. I: 360.—Busch, l. c. 519.—Rech. f., l. c. 19.

Distr. Iran, Afghanistan, Gorn.—Turkm.

Lepidium pumilum Boiss. et Bal., Diag. Ser. II, VI: 21 (1859).—Rech. f., l. c. 19 (1959).

Distr. Asia Minor, Afghanistan.

Lepidium ruderae L., Sp. Pl. 645 (1753).—Boiss., F. O. I: 361.—Hooker f. et And., F. B. I. I: 160.—Hegi, Ill. Fl. IV₁: 83, Tab. 126-2 (1919).—Busch, l. c. 511.

Lepidium Neubaueri Rech. f. in Anz. Österr. Akad. Wiss. math.-naturw. Kl. 1954, 7: 1 (1954), Symb. Afgh. IV: 17, Fig. 2 (1959).

Distr. Europe, Asia Minor, Caucasus, Mesopotamia, Afghanistan, Western Tibet, Siberia, Central Asia.

Lepidium sativum L., Sp. Pl. 644 (1753).—Boiss., F. O. I: 354.—Bornm. in Engler, Bot. Jahrb. LXVI: 221 (1934).—Busch, l. c. 508.—Rech. f., l. c. 19.

Eastern Prov. Kandai (July 28, 1955 S. K.), Cult. in Gard. Kyoto University (June 24, 1956 S. K.).

Distr. Cultivated plant. In Afghanistan, this is called Taratezak and used for vegetable. The writer brought seeds from Kandahar and from Mazarisharif.

Lepidium spathulatum Rech. f., l. c. 1954, 7: 2, Symb. Afgh. IV: 19, Fig. 3 (1959).

Distr. Afghanistan.

Lepidium tofaceum Rech. f., Symb. Afgh. IV: 20 (1959).

Distr. Afghanistan.

Leptalum filifolium (Willd.) DC., Syst. II: 511 (1821).—Deless., Ic. II t. 68 (1823).—Boiss., F. O. I: 243.—Aitch., T. L. S. n. III: 35.—Bornm. in Engler, Bot. Jahrb. LXVI: 221 (1934).—Schulz in Pflanzenfam. 2 ed. 17b: 568, Fig. 345.—Vassilc., l. c. 302, Tab. XIX-1 (1939).—Rech. f., l. c. 42.

L. pygmaeum DC., l. c.—Deless., Ic. II t. 68.

Distr. Aegypt, Reg. Casp., Iran, Afghanistan, Central Asia, Pakistan.

Lobularia maritima Desv. in Journ. Bot. III: 169 (1814).—O. E. Schulz in Notiz. Berl.-Dahl. IX: 1087 (1927), Pflanzenfam. 2 ed. 17b: 495, Fig. 325, F-K (1936).

Koniga maritima (Desv.) R. Br. in App. Denh. et Clapp. Narr. Exp. Afr. II: 214 (1826).—Busch, l. c. 364.

Distr. Mediterranean Reg., Caucasus, Afghanistan.

Malcolmia africana (L.) R. Br. ex Ait., Hort. Kew. 2 ed. IV: 121 (1812).—Boiss., F. O. I: 223.—Reich., Ic. Fl. Germ. II, 57 fig. 4371.—Aitch., T. L. S. n. III: 33.—Hooker f. et And., F.B.I. I: 146.—Bornm. in Engler, Bot. Jahrb. LXVI: 220 (1934).—Vassilc., l. c. 276, Tab. XVI-4 (1939).—Rech. f., l. c. 42.

Malcomia intermedia C. A. Mey., Verz. Pfl. Cauc. 186 (1831).—Aitch., T. L. S. n. III: 34.

M. africana var. *intermedia* Boiss., l. c.

Between Kandahar and Kabul (June 9-11, 1955 S. K.).

var. **trichocarpa** Boiss., F. O. I: 223.—Bornm., l. c.

Malcolmia trichocarpa Boiss. et Buhse, Aufzahl 21 (1860).—Busch, l. c. 280.—Rech. f., l. c. 45.

Doab (June 24, 1955 S. K.), between Bulola and Doab (June 25, 1955 S. K.).

var. **gracilis** O. E. Schulz in Notiz. Berl.-Dahl. IX: 1087 (1927).

Distr. sp. E. Europe, Caucasus, Mediterranean Region, Asia Minor, Altai, Central Asia, Iran, Afghanistan, Pakistan, Kashmir, Dz. Kashg.

Malcolmia Behboudiana Rech. f. et Esfandiari in Phytion III: 64 (1951).—Jafri in Notes Bot. Gard. Edinb. XXII: 110 (1957).

Malcolmia Bungei Boiss. var. *glabrescens* Boiss., F. O. I: 226.—Aitch., T. L. S. n. III: 34

Shishigar (June 10, 1955 S. K.).

Distr. sp. Afghanistan, Pakistan, Iran, Arabia.

Malcolmia Boissieriana Jafri in Notes Bot. Gard. Edinb. XXII: 111 (1956).
—Rech. f., l. c. 43.

M. circinata (Bunge) Boiss., F. O. I: 127 (1867) non Hooker f. et Thoms.—Busch in Fl. URSS VIII: 281, Tab. XVI-1 (1939).

Distr. Afghanistan, Central Asia: Kyz.-Kum., Kara-Kum., Pribalx.

Malcolmia cabulica Hooker f. et Thoms. in Journ. Linn. Soc. V: 156 (1861).
—Boiss., F. O. I: 224.—Aitch., T. L. S. n. III: 34.—Jafri in Notes Bot. Gard. Edinb. XXII: 111 (1956).—Rech. f., l. c. 43.

Malcolmia Koelzii Rechinger f. in Phytion III: 64 (1951), Symb. Afg. IV: 44, Fig. 17 (1959).

Distr. Afghanistan, Pakistan.

Malcolmia grandiflora (Bunge) O. Kuntze in Acta Horti Petrop. X: 167 (1887).
—Rech. f., l. c. 43.

Malcolmia turkestanica Litw. in Sched. Herb. Fl. Ross. IV: 32. —Rech., f. l. c. 45.

Malcolmia Bungei Boiss., F. O. I: 226.—Lipsky in Acta Horti Petrop. XVIII: 9 (1900).

Dontostemon grandiflorus Bunge in Arb. Naturf. Ver. Riga I: 147 (1847).

Distr. Central Asia, Afghanistan.

Malcolmia halophila Gilli in Fedde, Rep. LVII: 224 (1955).—Rech. f., l. c. 43.
Distr. Afghanistan.

Malcolmia longipetala Gilli, l. c. 223.—Rech. f., l. c. 44.

Malcolmia strigosa var. *macrantha* O. E. Schulz in Notiz. Bot. Gart. Berl. IX: 1087 (1927).

Shishigar (June 11, 1955 S. K.), Charikar (June 23, 1955 S. K.).

Distr. Afghanistan, Pakistan.

Malcolmia strigosa Boiss. in Ann. Sci. Nat. sér. II, XVII: 701 (1842), F. O. I: 224.—Rech. f., l. c. 45.

Distr. Iran, Afghanistan, Pakistan.

Matthiola alyssifolia (DC.) Bornm. in Fedde, Rep. XXXIX: 80 (1935).

Matthiola albicaulis Boiss. in Ann. Sci. Nat. sér. II, XVII: 46 (1842).—Aitch., T. L. S. n. III: 32.—Czern. in Fl. URSS VIII: 289.

Hesperis alyssifolia DC., Syst. II: 447 (1821).—Deless., Ic. II t. 61 (1823).

Distr. Iran, Gorn.—Turkm., Pam.—Al., Iran, Afghanistan (W).

Matthiola chenopodifolia Fischer et Mey. in Linnaea X Litt.—Ber. 96 (1836), Index Sem. Horti Petrop. 1: 33 (1835).—Boiss., F. O. I: 153.—Aitch., T. L. S. n.

III.: 33.—Czern., l. c. 294.—Rech. f., Symb. Afgh. IV: 40 (1959).

Distr. Iran, Central Asia, Afghanistan.

Matthiola chorasana Bunge ex Boiss., F. O. I: 151 (1867).—Rech. f., Symb. Afgh. IV: 40.

Distr. Iran, Afghanistan.

Matthiola Codringtonii Rech. f., Symb. Afgh. IV: 40 (1959).

Distr. Afghanistan.

Matthiola flavida Boiss., Diag. Ser. I, VI: 9 (1845), F. O. I: 151.—O. E. Schulz in Notiz. Bot. Gart. Berl.—Dahl. IX: 1089 (1927).

Matthiola odoratissima Hooker f. et Anders. (non R. Br.), F. B. I. I: 131.—Aitch., T. L. S. n. III: 33.

Matthiola afghanica Rech. f. et Köie in Anz. Österr. Akad. Wiss. math.-naturw. Kl. 1954, 7: 5, Symb. Afgh. IV: 38, Fig. 15.

var. **integrifolia** (Komarov) O. E. Schulz in Notiz. Berl.—Dahl. IX: 1089 (1927).

M. integrifolia Komarov in Trav. Soc. Nat. St. Pétersb. XXVI: 85.—Rech. f., l. c. 40.

Matthiola sp. Aitch. l. c.

Shishigar (June 24, 1955 S. K.), Shibar Pass (June 24, 1955 S. K.).

Distr. sp. Iran, Afghanistan, Pakistan.

Matthiola runcinata Regel in Bull. Soc. Nat. Mosc. XLIII, I: 254 (1870).—Rech. f., Symb. Afgh. IV: 41 (1959).

Distr. Afghanistan, Pakistan, Temp. Asia.

Microsysimbrium Griffithianum (Boiss.) O. E. Schulz in Pflanzenreich Heft 86: 161 (1924).

Sisymbrium Griffithianum Boiss., Diag. Pl. Or. Ser. II, I: 23 (1853), F. O. I: 214.

Distr. Iran, Central Asia, Afghanistan.

Microsysimbrium minutiflorum (Hooker f. et Thoms.) O. E. Schulz in Pflanzenreich Heft 86: 160, Fig. 26.—Rech. f., l. c. 48.

var. **dasycarpum** O. E. Schulz, l. c.

Sisymbrium minutiflorum Hooker f. et Thom. sensu Boiss., F. O. I: 215.

Distr. sp. Iran, Afghanistan (var.), Kashmir.

Microsisymbrium pulchellum Rech. f., l. c. 1954, 7: 6, Symb. Afgh. IV: 48, Fig. 20.

Distr. Afghanistan.

Moriera cabulica Boiss., Diag. Ser. II, I: 41 (1854), F. O. I: 339.

M. spinosa Boiss. subsp. *cabulica* Jafri in Notes Bot. Gard. Edinb. XXII: 113 (1956).—Rech. f., l. c. 25.

Distr. Afghanistan, Iran.

Moriera transhyrcana Czern. in Fedde, Rep. XXVII: 270 (1930).—Rech. f., l. c.

25.

Distr. Afghanistan, Central Asia (Turcum.).

Nasturticarpa notorrhiza Gilli in Fedde, Rep. LVII: 229, Abb. 4 (1955).—Rech. f., Symb. Afgh. IV: 50.

Kabul, Airport (May 23, 1955 S. K.).

Distr. Afghanistan.

Nasturtium officinale R. Br. in Ait., Hort. Kew. ed. II, IV: 111 (1812).—Boiss., F. O. I: 178.—Aitch., J. L. S. XVIII: 33.—Reich., Ic. II: t. 50 f. 4359.—Vassilc. in Fl. URSS VIII: 143 (1939).—Rech. f., l. c. 38.

Nasturtium microphyllum (Boenn.) Reich., Ic. Fl. Germ. II: t. 50 f. 4360 (1837–8).—Rech. f., l. c. 38.

Pagman near Kabul (July 15, 1955 S. K.).

Distr. Northern Hemisphere.

Neslia apiculata (Fischer, Mey. & Avé-Lall.) C. A. Mey., Index Sem. Horti Petrop. VIII: 68.—Schulz in Pflanzenfam. 2 ed. 17b: 477 (1936).—Rech. f., l. c. 27.

Neslia paniculata (non Desv.).—Boiss., F. O. I: 371.—Hooker f. et Anders., Fl. B. I. I: 164.—Reich., Ic. Fl. Germ. II: t. 24 f. 4291.—Vassilc., l. c., Tab. XX–2 (1939).

Shibar Pass (June 24, 1955 S. K.), Shishigar (June 11, 1955 S. K.).

Styles articulated above the base.

Distr. Southern Europe, North Africa, Iran, Caucasus, Central Asia, Afghanistan, Pakistan, Himalaya: Kashmir.

Notoceras bicornе (Ait.) Amoy Mora, Fl. Penins. Iber. VI: 536 (1873).—Schulz in Pflanzenfam. 2 ed. 17b: 560, Fig. L–N (1936).

Notoceras canariense R. Br. in Ait., Hort. Kew. ed. 2. IV: 117 (1812).—Boiss., F. O. I: 314.—Hooker f. et Anders., F. B. I. I: 140.

Distr. Mediterranean Reg., Afghanistan, Pakistan.

Otoceras Lehmanianum Bunge in Arbeit. Nat. Ver. Riga I: 172 (1847).—Schulz in Pflanzenfam. 2 ed. 17b: 469, Fig. 222 G–J (1936).—Rech. f., l. c. 27.

Distr. Central Asia, Iran, Afghanistan.

var. **Stocksianum** Boiss., F. O. I: 370.—Rech. f., l. c.

Distr. Afghanistan, Pakistan.

Pachypterygium afghanicum Gilli in Fedde, Rep. LVII: 218, Abb. 1 (1955).—Rech. f., l. c. 24.

Distr. Afghanistan.

Pachypterygium brevipes Bunge, Del. Sem. h. Dorpat. 8 (1843), in Linnaea XVIII: 155 (1844).—Boiss., F. O. I: 874.—Jarmolenko in Fl. URSS VIII: 224, Tab. XII 1 (1939).—Rech. f., l. c. 24.

Pachypterygium heterotrichum Bunge ex Boiss., F. O. I: 374 (1867).—Aitch., T. L. S. n. III: 37.—Rech. f., l. c. 24.

Distr. Central Asia, Iran, Afghanistan (W), Pakistan.

Pachypterygium microcarpum Gilli in Fedde, Rep. LVII : 219 (1955).—Rech. f., l. c. 24.

Distr. Afghanistan.

Parrya minjanensis Rechinger f. in Phytion III 62 (1951), Symb. Afgh. IV : 42, Fig. 16 (1959).

Distr. Afghanistan.

Parrya nudicaulis (L.) Boiss., F. O. I. 159.—O. E. Schulz in Pflanzenfam. 2 ed. 17b : 567, Fig. 346 Q–U (1936).—Busch in Fl. URSS VIII : 260 (1939).—Rech. f., l. c. 42.

Distr. Northern Asia to North America, Afghanistan.

Parrya pinnatifida Kar. et Kir. in Bull. Soc. Nat. Mosc. XV : 147 (1842).—Boiss., F. O. I : 159.—Busch, l. c. 262.—Rech. f., l. c. 42.

Distr. Afghanistan, Pam.–Al., Dz.–Tarb., Tianshan.

Physorrrynchus Brahuicus Hooker, lc. Pl. t. 821, 822 (1852).—Boiss., F. O. I : 403.—Hooker f. et Anders., F. B. I. I : 165.—Schulz in Pflanzenreich Heft 84 : 34, Fig. 10, F (1923).

Distr. Pakistan, Afghanistan, Iran.

Pyramidium Griffithianum Boiss., Diag. Ser. II, I : 46 (1854)., F. O. I : 367.—Rech. f., l. c. 38.

Distr. Afghanistan (Deirhaj).

Raphanus raphanistrum L., Sp. Pl. 669 (1753).—Aitch., J. L. S. XVIII : 35.—Sinskaja in Fl. URSS VIII : 494 (1939).—Rech. f., l. c. 13.

Distr. Europe, North Africa, Asia Minor, Caucasus, Armenia, Syria, Pakistan (Kuram).

Raphanus sativus L., Sp. Pl. 669.

var. **niger** Kerner, Abbid. Oekon. Pfl. III : t. 257, 258 (1789).

Cult. in Bot. Gard. Kyoto Univ. Seeds from Kabul and Mazarisharif (May 17, 1955 S. K.), (June 5, 1955 S. K.), Kabul, Chonghol (July 22, 1955 S. K.).

Distr. Originated in Mediterranean Reg.

In Afghanistan, var. **niger**, Muli-e-Herati is largely cultivated. Also var. **radicula** Muli-e-Angrari is cultivated and sold at the markets.

Robeschia Schimper (Boiss.) O. E. Schulz in Pflanzenreich Heft 86 : 360, Fig. 73 (1924).—Rech. f., l. c. 52.

Sisymbrium Schimper Boiss. in Ann. Sc. Nat. sér. II, XVII : 76 (1842), F. O. I : 215.

Distr. Sinai, Syria, Iran, Afghanistan, Pakistan.

Rorippa islandica (Oeder) Borbas ; Schinz et Thellung in Vierteljahrsschr. Nat. Ges. Zürich LIII : 538 (1908).—Hegi, Ill. Fl. IV, : 316, Taf. 132, Fig. 5 (1919).—Rech. f., l. c. 37.

Nasturtium palustre DC., Syst. II: 191 (1821).—Boiss., F. O. I: 179.—Aitch., J. L. S. XVIII: 33.

Nuristan: Between Seprigal and Voma (July 29, 1955 S. K.).

Distr. Cosmopolitan.

Sameraria armena (L.) Desv. in Journ. Bot. III: 161.—Boiss., F. O. I: 375.—Jaub. et Spach, Ill. Or. t. 225.—Schulz in Pflanzenfam. 2 ed. 17b: 423, Fig. 247 (1936).—Vassilc. et Busch in Fl. URSS VIII: 229, Tab. XIII-3 (1939).—Rech. f., l. c. 24.

Isatis armena L., Sp. Pl. 670 (1753).—Aitch., T. L. S. n. III: 37.

Distr. Armenia, Iran, Caucasus, Afghanistan.

Sameraria stenophylla Rech. f. et Köie, l. c. 1954, 7: 3, Symb. Afgh. IV: 24, Fig. 7 (1959).

Distr. Afghanistan.

Sinapis arvensis L., Sp. Pl. 668 (1753).—Boiss., F. O. I: 394.—Rech. f., l. c. 13.

Distr. Mediterranean Region, Mesopotamia, Iran, Afghanistan.

Sisymbrium afghanicum Gilli in Fedde, Rep. LVII: 228 (1955).—Rech. f., l. c. 47.

Distr. Afghanistan.

Sisymbrium altissimum L., Sp. Pl. 659 (1753).—Schulz in Pflanzenreich Heft 105: 116, Fig. 22 (1924).

Shibar Pass (June 24, 1955 S. K.).

Distr. Europe, Asia Minor, Central Asia, Iran, Afghanistan, Pakistan.

Sisymbrium brassiciforme C. A. Mey. in Ledeb., Fl. Alt. III: 129 (1831).—O. E. Schulz, l. c. 85, Fig. 19.—Rech. f., l. c. 47.

Sisymbrium Columnae (non Jacq.) Hooker f. et Anders., F. B. I. I: 150.

Between Shibar and Chardi-i-Ghorband (July 11, 1955 S. K.), Doab (June 24, 1955 S. K.).

Distr. Afghanistan, Pakistan, Central Asia, Siberia.

Sisymbrium Irio L., Sp. Pl. 659 (1753).—Boiss., F. O. I: 217.—Hooker f. et Anders., F. B. I. I: 150.—Schulz in Pflanzenreich Heft 86: 89 (1924).—Hegi, Ill. Fl. IV₁: 169, Fig. 772 f-1 (1919).—Vassilc., l. c. 44.—Rech. f., l. c. 47.

Kandahar (June 7, 1955 S. K.).

Distr. Europe, North Africa, Western Asia, Central Asia: Gorn.—Turkm., Pam.—Al., Afghanistan, Pakistan, China.

Sisymbrium Loeselii L., Cent. Pl. I: 18 (1755).—Boiss., F. O. I: 218.—Aitch., J. L. S. XVIII: 34.—Schulz in Pflanzenreich Heft 86: 94 (1924).—Hegi, Ill. Fl. IV₁: 174 (1919).—Bornm. in Engler, Bot. Jahrb. LXVI: 220 (1934).—Vassilc., l. c. 44.—Rech. f., l. c. 48.

Between Bulola and Doab (June 25, 1955 S. K.), Bamian (June 24, 1955 S. K.).

f. **glaberrima** Bornm. in Engler, Bot. Jahrb. LXVI: 220 (1934).

Sarobi (June 16, 1955 S. K.).

Distr. sp. Europe, Caucasus, Siberia, Asia Minor, Central Asia, Iran, Afghanistan, Pakistan, Himalaya: Kashmir, Dz.-Kashgar, Mongolia.

Sisymbrium orientale L., Cent. II. 24 (1756).—O. E. Schulz in Pflanzenreich Heft 86: 122 (1924).—Hegi, Ill. Fl. IV, 1: 179 Fig. 774 e, f (1919).—Vassilc. in Fl. URSS VIII: 50, Tab. II-1 (1935).

Sisymbrium Columnae Jacq., Fl. Austr. IV: 12 t. 323 (1776).—Boiss., F. O. I: 216.—Aitch., J. L. S. XVIII: 34.

Distr. Europe, Algeria, Asia Minor, Syria, Caucasus, Mesopotamia, Afghanistan.

Sisymbrium septulatum DC., Syst. II: 471 (1821).—Schulz in Pflanzenreich Heft 105: 121 (1924).—Rech. f., l. c. 48.

Sisymbrium sp. Aitch., T. L. S. n. III: 34.

Distr. Afghanistan, Iran, Mesopotamia, Kurdistan, Armenia.

Smelowskia calycina (Willd.) C. A. Mey. in Ledeb., Fl. Alt. III: 170 (1831).—Busch, l. c. 90 (1939).—Jafri in Notes Bot. Gard. Edinb. XXII: 117 (1956).

Chrysanthemopsis Koelzii Rech. f. in Phytion III: 51 (1951).

Smelowskia Koelzii (Rech. f.) Rech. f. in Öst. Akad. Wiss. math.-naturw. Kl. 1954, 7: 6, Symb. Afgh. VI: 52, Fig. 22 (1959).

Distr. Central Asia, Siberia, Mongolia, Afghanistan, Pakistan.

Streptoloma desertorum Bunge in Arb. Naturf. Ver. Riga I: 156 (1847).—Boiss., F. O. I: 238.—O. E. Schulz in Notiz. Berl.-Dahl. IX: 1094 (1927), in Pflanzenfam. 2 ed. 17b: 626, Fig. 396, A-L (1936)—Vassilc., l. c. 305.—Rech. f., l. c. 48.

Distr. Afghanistan (W), Central Asia.

Sterigostemum purpurascens (Boiss.) Kuntze, Rev. Gen. 36 (1891).

Sterigma purpurascens Boiss., F. O. I: 241.

Distr. Afghanistan (W), Iran.

Strogonowia affghanica (Boiss.) Pavlov. in Journ. Bot. URSS XVIII: 369 (1933), Fl. URSS VIII: 529 (1939).

Lepidium affghanicum Boiss., F. O. I: 358.

Distr. Afghanistan (W), Gorn.-Turkm.

Strogonowia puberula Kitamura in Acta Phytotax. Geobot. XVIII: 139 (1958).

Fig. 55.

Strogonowia paniculata (non Regel et Schmalh.) Rech. f., Symb. Afgh. IV: 27 (1959).

Lepidium altissimum Rech. f., Symb. Afgh. IV: 14 (1959).

A *S. affghanica* foliis latioribus obtusis puberulis, pedicellis longioribus distinguenda.

Caudex incrassatus lignosus obliquus 1–2 cm diametro superne basibus petiolorum anni praecedenti dense fibroso. Caulis 1–2, erectus 80–100 cm altus robustus glaucus 3–6 mm in diametro, striatus glaber, supra medium ramosus, ramis erectopatentibus.

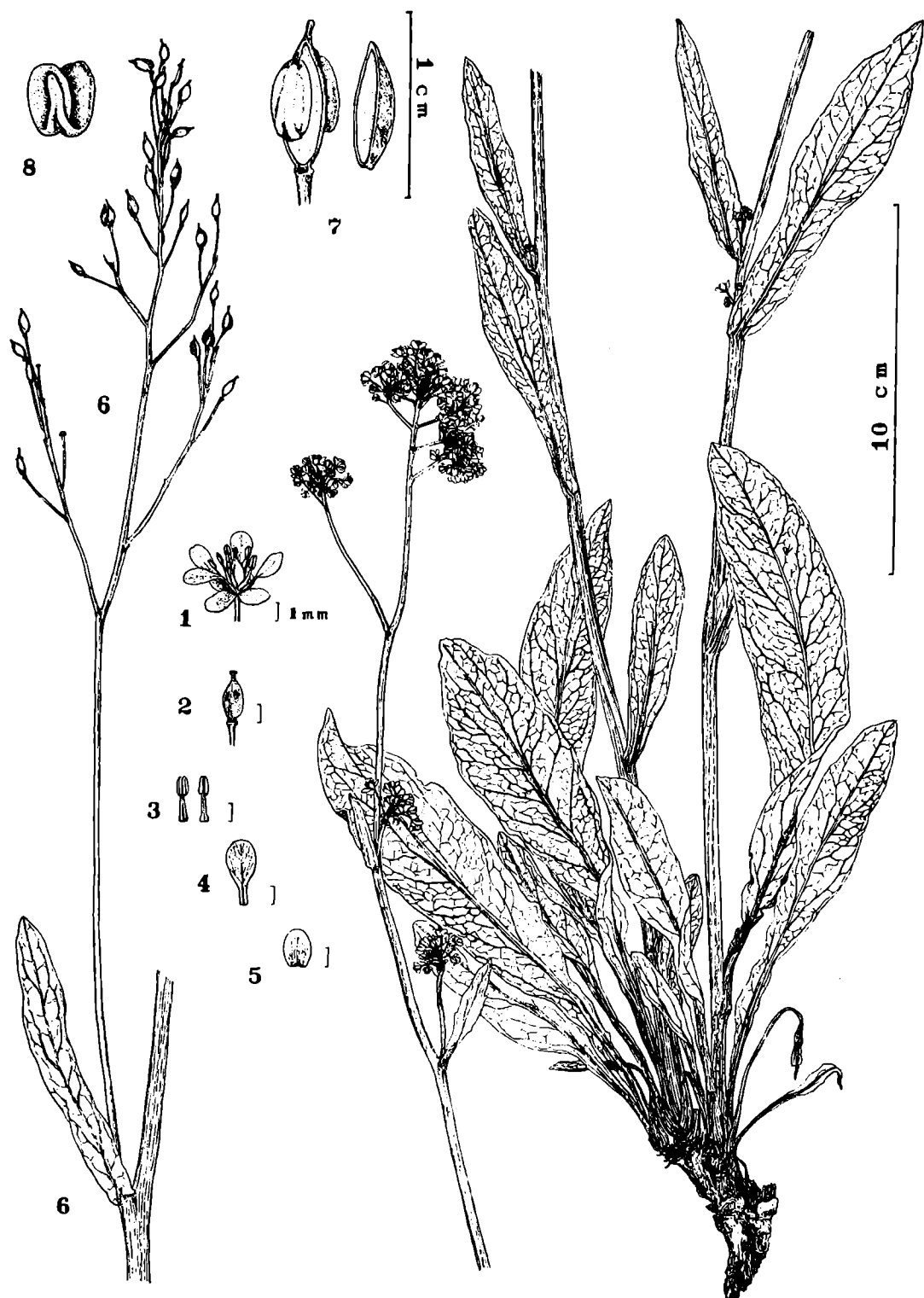


Fig. 55. *Strogonovia pubescens* Kitam.: 1 Flower, 2 Pistil, 3 Stamens, 4 Petal, 5 Sepal, 6 Fruiting Inflorescens, 7 Silicle, 8 Embryo. (Flowering specimen from Nuristan: Eschtaway).

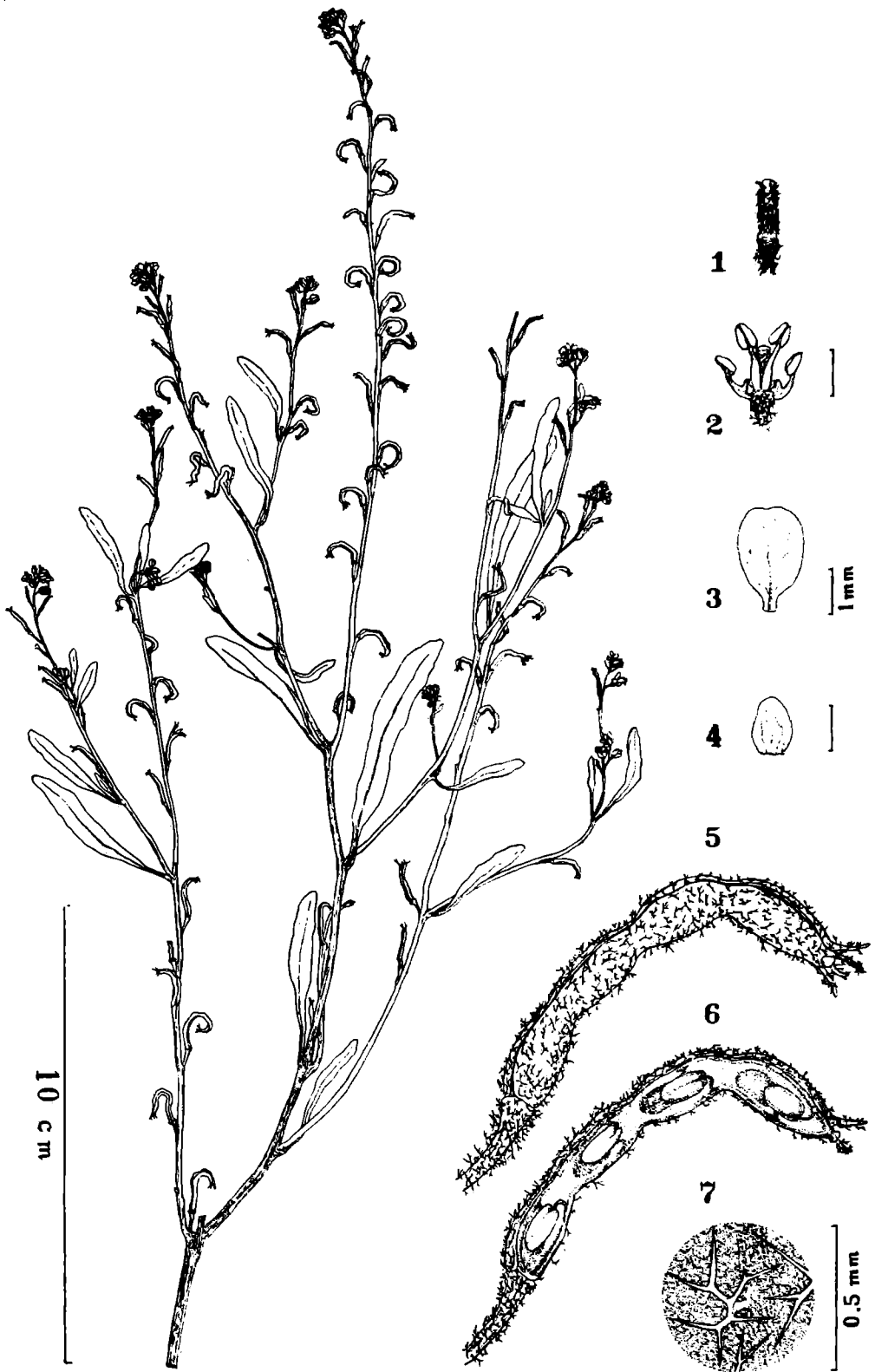


Fig. 56. *Tetracme elongata* Kitam.: 1 Pistil, 2 Stamens, 3 Petal, 4 Sepal, 5 Siliqua, 6 Vertical section of Siliqua, 7 Stellate Hairs on Leaf. (Between Bulola and Doab).

Folia radicalia oblanceolata 17–20 cm longa 2–3.5 cm lata apice rotundata basi in petiolum 3.5–4.5 cm longum exalatum longe attenuata margine integra undulata reticulatonervosa, utrinque sub lente minutissime puberula, textura crassiuscula, folia caulina inferiora oblanceolata 15–21 cm longa 2.5–3 cm lata apice obtusa basi in petiolum exalatum 1–2 cm longum attenuata, folia caulina media oblanceolata vel oblongo-lanceolata 8–11 cm longa 1.7–2.4 cm lata apice obtusa vel acuta basi sessilia vel auriculato-amplexicaulia, integra utrinque minute puberula demum glabrata, folia superiora sursum depauperata. Inflorescentia ebracteata primum duplicato-corymbosa demum elongata paniculato-racemosa. Flores pedicellati, pedicellis sub anthesi 5 mm longis, demum 11 mm longis, sepala elliptica 1.5 mm longa margine hyalina, petala pallide flava obovata 3 mm longa 2 mm lata basi unguiculata. Siliqua glabra cum stylo 6 mm longa, stylo 0.5 mm longo, valvis cymbiformibus 4.6 mm longis 2.5 mm latis. Semen in loculo 1, oblongum 4 mm longum 2 mm latum atrobrunnescens sulcatum. Cotyledones incumbentes.

Nuristan: Eschtaway circ. 3800 m (Aug. 5, 1955 S. K.).—Typus in Herb. Univ. Kyoto.

Distr. Afghanistan.

Stubendorfia afghanica Rech. f. et Köie in Anz. Öesterr. Akad. Wiss. math.-naturw. Kl. 1954, 7: 2, Symb. Afgh. IV: 21, Fig. 4 (1959).

Distr. Afghanistan.

Tetracme contorta Boiss., F. O. I: 317 (1864).—Rech. f., l. c. 38 (1959).

Distr. Afghanistan (Choky), Pakistan.

Tetracme elongata Kitamura in Acta Phytotax. Geobot. XVII: 140 (1958).
Fig. 56.

Abs T. quadricorne, racemis fructiferis laxiusculis, siliquis et pedicellis longioribus distinguenda.

Annus. Caulis circ. 25 cm longus dense stellato-pubescent inferne 1–2 mm diametro, ramis saepe divaricatis. Folia radicalia sub anthesi emarcida, caulina inferiora et media oblanceolata 3–5 cm longa 4–9 mm lata apice obtusa basi sensim angustata subsessilia margine integra utrinque stellato-pubescentia, textura tenuia. Inflorescentia ebracteolata sub anthesi corymbosa demum racemosa ad 20 cm longa, internodiis circ 10 mm longis. Pedicelli sub anthesi 1.5 mm longi, in fructu 2 mm longi ad inflorescentiam adpressi incrassati. Sepala late oblonga 1.2 mm longa dorso dense stellato-pubescentia. Petala alba late oblonga 2.8 mm longa 1.7 mm lata basi subito unguiculata, unguis 0.5 mm longis. Siliqua valde recurva circ. 1 cm longa 0.8 mm lata dense stellato-pubescent, stigma subsessile, cornibus 4, divarcatis inaequilongis 1–1.5 mm longis. Semina oblonga 1.2 mm longa brunnescentia.

Between Bulola and Doab (June 25, 1955 S. K.).—Typus in Herb. Univ. Kyoto.

Distr. Afghanistan.

Rechinger reported T. quadricornis Bunge from Bamian and Pulikhumri, in Symb.

Afgh. IV : 38.

Tetracme pamirica Vass. in Fl. URSS VII : 648 (1939), VIII : 300, Tab. XIX fig. 4 (1939).—Jafri in Notes Bot. Gard. Edinb. XXII : 118 (1956).—Rech. f., l. c. 38, Fig. 14 (1959).

Tetracme adpressa Rechinger f. in Phytion III : 60 (1951).

Distr. Afghanistan, Pamir.

Tetracme secunda Boiss., F. O. I : 316 (1864).—Rech. f., l. c. 38 (1959).

Distr. Afghanistan (Dair-haj).

Thlaspi arvense L., Sp. Pl. 641 (1753).—Boiss., F. O. I : 323.—Aitch., J. L. S. XVIII : 34.—Hooker f. et Anders., F. B. I. I : 162.—Busch, l. c. 581, Tab. XXX-4 (1939).—Rech. f., l. c. 26.

Distr. Eurasia. As a weed in cultivated fields.

Thlaspi cardiocarpum Hooker f. et Thom. in Journ. Linn. Soc. V : 176 (1861).—Boiss., F. O. I : 325.—Hooker f. et Anders., F. B. I. I : 162.—Aitch., J. L. S. XVIII : 34.—Rech. f., l. c. 26.

Distr. Afghanistan, Himalaya : Kashmir.

Thlaspi cochleariforme DC., Syst. II 381 (1821).—O. E. Schulz in Notiz. Berl.-Dahl. IX : 1094 (1927).—Busch, l. c. 587.

subsp. **Griffithianum** (Boiss.) Jafri in Notes Bot. Gard. Edinb. XXII : 1191 (1956).—Rech. f., l. c. 26.

Thlaspi Griffithiana Boiss., F. O. I : 329.

Carpoceras Griffithianum Boiss., Diag. Ser. I, VIII : 40 (1849).

Thlaspi alpestre Hooker f. et Anders. (non L.), F. B. I. I : 162.—Aitch., J. L. S. XVIII : 34.

Distr. Afghanistan, Central Asia, [Pakistan, Himalaya : from Kashmir to Sikkim.

Thlaspi perfoliatum L., Sp. Pl. 641 (1753).—Boiss., F. O. I : 325.—Hegi, Ill. Fl. IV₁ : 121, Tab. 128, f. 2 (1919).—Busch, l. c. 585, Tab. XXXIII-6 (1939).—Rech. f., l. c. 26.

Distr. Europe, North Africa, Caucasus, Asia Minor, Iran, Afghanistan, Central Asia, Altai.

Torularia dentata (Freyn et Sintenis) Kitamura comb. nov.

Torularia adpressa (Trautv.) O. E. Schulz in Pflanzenreich Heft 86 : 231 (1924).—Vassilc. in Fl. URSS VIII : 64, Tab. IV-2 (1939).

Sisymbrium adpressum Trautv. in Acta Horti Petrop. IX, I : 367 (1884) non Turcz. (1854).

Cryptospora dentata Freyn et Sintenis in Bull. Herb. Boiss., Sér. II, III : 693 (1903).

Distr. Gorn.-Turkm., Afghanistan.

Torularia humilis (C. A. Mey.) O. E. Schulz in Fedde, Rep. Sp. Nov. Beih. XII : 390 (1922), Pflanzenreich Heft 86 : 223 (1924).—Vassilc., l. c. 65.—Jafri in

Notes Bot. Gard. Edinb. XXII: 119 (1956).—Rech. f., l. c. 48.

Distr. sp. Afghanistan (Wakhan), Tianshan, Pam.-Al., Siberia, Mongolia, Himalaya: from Kashmir to Kumaon, Tibet (var. *Piasezkii*), China (var. *Piasezkii*), North America.

Torularia kandaharensis Rech. f. et Köie in Anz. Österr. Akad. Wissensch. math.-naturw. Kl. 1954, 7: 6.—Rech. f., l. c. 49, Fig. 19.

Distr. Afghanistan.

Torularia Korolkovii (Regel et Schmalh.) O. E. Schulz in Pflanzenreich Heft 84: 220 (1924).—Rech. f., l. c. 50.

Distr. Central Asia, Afghanistan, Mongolia.

Torularia torulosa (Desf.) O. E. Schulz in Pflanzenreich Heft 86: 214, Fig. 6c (1924).—Vassilc., l. c. 61.—Rech. f., l. c. 50.

Malcolmia torulosa Boiss., F. O. I: 225.

Malcolmia cornuta Stapf. in Denk. Akad. Wiss. Wien, LI: 32 (1886) excl. syn. Pall.—Bornm. in Engler, Bot. Jahrb. LXVI: 221 (1934).

Distr. North Africa, E. Europe, Asia Minor, Armenia, Caucasus, Iran, Afghanistan, Central Asia, Pakistan.

Turritis glabra L., Sp. Pl. 666 (1753).—Hegi, Ill. Fl. IV₁: 393, Taf. 136–1, Fig. 844 (1919).—Reich., Ic. II: t. 44 f. 4346.—Busch in Fl. URSS VIII: 171 (1939).

Arabis glabra Crantz., Stirp. Austr. I: 36 (1762).—Hooker f. et Anders., F. B. I. I: 135.

Nuristan: Chatrass (Aug. 2, 1955 S. K.).

Distr. Eurasia, North America.

Wakilia afghanica Gilli in Fedde, Rep. LVII: 221, Abb. 2 (1955).—Rech. f., l. c. 30.

Distr. Afghanistan.

Winklera silaifolia (Hooker f. et Thoms.) Korsh. in Bull. Acad Pétersb. Sér. V, IX: 419 (1898).—Rech. f., l. c. 21.

Heldreichia silaifolia Hooker f. et Thoms. in Journ. Linn. Soc. V: 176 (1861).—Boiss., F. O. I: 320.

Distr. Afghanistan.

Resedaceae

Oligomeris linifolia (Vahl) Macbride in Contr. Gray Herb. n. s. LIII: 13 (1918).—Fedde in Pflanzenfam. 2 ed. 17b.: 685, Fig. 429.

Reseda linifolia Hornem., Hort. Hafn. II: 501 (1813–5).

Oligomeris subulata Boiss., F. O. I: 435.

Oligomeris glaucescens Camb. in Jacquem., Voy. Bot. IV: 24, t. 25.—Hooker f., F. B. I. I: 181.

Distr. Mediterranean Region, Iran, Afghanistan, Pakistan, India, North America: from California to Texas and Mexico.

Reseda Aucheri Boiss., Diag. Ser. I, I: 5 (1842), F. O. I: 434.—Aitch., T. L.

S. n. III: 38.

Distr. Mesopotamia, Iran, Afghanistan (W).

Reseda bracteata Boiss., Diag. Ser. I, VI: 22 (1845), F. O. I: 433.

Between Pulikhumri and Haibak (June 27, 1955 S. K.).

Distr. Mesopotamia, Iran, Afghanistan, Pakistan.

β. **Chabbisea** Boiss., F. O. I: 434 (1867).

Distr. Afghanistan (SW).

Reseda luteola L., Sp. Pl. 448 (1753).—Boiss., F. O. I: 434.—Reich., Ic. II: t. 4442.—Aitch., J. L. S. XVIII: 35, T. L. S. n. III: 38.

Kandahar, Arghandab (June 7, 1955 S. K.), between Sarobi and Kabul (June 18, 1955 S. K.).

Distr. Europe, North Africa, Caucasus, Asia Minor, Iran, Afghanistan.

Crassulaceae

Sedum adenotrichum Wall. ex Hooker f. et Thomson in J. L. S. Bot. II: 101 (excl. var. β.) (1858).—Clarke, F. B. I. II: 420.—Aitch., J. L. S. XVIII: 162.—Praeger in Journ. Roy. Hort. Soc. XLVI: 163, Fig. 89 (1921).—Berger in Pflanzenfam. 2 ed. 18a: 451 (1930).—Fröders., Sedum II: 26, figs. 180–8, Pl. XII—3, XIII (1931).—Wendelbo in Nytt Mag. Bot. I: 35 (1952).

Cotyledon tenuicaulis Aitch. et Hemsl., J. L. S. XVIII: 57, XIX: Pl. 10, 1–5.

Cotyledon papillosa Aitch. et Hemsl., l. c. 58.

Nuristan: Chatrass (Aug. 2, 1955 S. K.).—Plant densely glandular hairy.

Distr. Afghanistan (E), Pakistan, Himalaya: Kashmir to Nepal.

Sedum Ewersii Ledeb., Fl. Alt. II: 191 (1830).—Aitchison, J. L. S. XVIII: 58.—Praeger, l. c. Fig. 45, 46.—Fröd., l. c. I: 26, Fig. 228–235, Pl. XXI (1930).—A. Boriss. in Fl. URSS IX: 64 (1939).—Wendelbo, l. c. 35.

Nuristan: Between Pushuki and Kushitaki (Aug. 4, 1955 S. K.), Esc htaway (Aug. 5, 1955 S. K.), Shabul Gul (Aug. 6, 1955 S. K.).

Distr. Afghanistan (E), Pakistan, Himalaya: from Kashmir to Kumaon, Altai, Dz.-Tarb., Tianshan, Pamiro-Al., Dz.-Kashg., Mongolia.

Sedum heterodontum Hooker f. et Thoms. in Journ. Linn. Soc. Bot. II: 95 (1858).—Clarke, F. B. I. II: 417.—Aitch., J. L. S. XIX: 162.—Praeger, l. c. 34, Fig. 7.—Wendelbo, l. c. 34.

Rhodiola heterodonta A. Bor., l. c. 32 (1939).

Sedum roseum var. *heterodontum* Fröders., l. c. I: 40, Pl. XIII–2 (1930).

Distr. Afghanistan, Pakistan, Himalaya: Kashmir, Kunawar, Mandala, Tianshan, Pam.-Al., Dz.-Kashg., Mongolia.

Sedum (*Rhodiola*, *Primuloides*) **nuristanicum** Kitamura in Acta Phytotax. Geobot. XVII: 138 (1958). Fig. 57, Lower.

Planta parva 3.5–4 cm alta, caudex incrassatus 5 mm diametro, radix ramosa obliqua. Folia radicalia sub anthesi viva rosulata oblonga 9–10 mm longa 5 mm

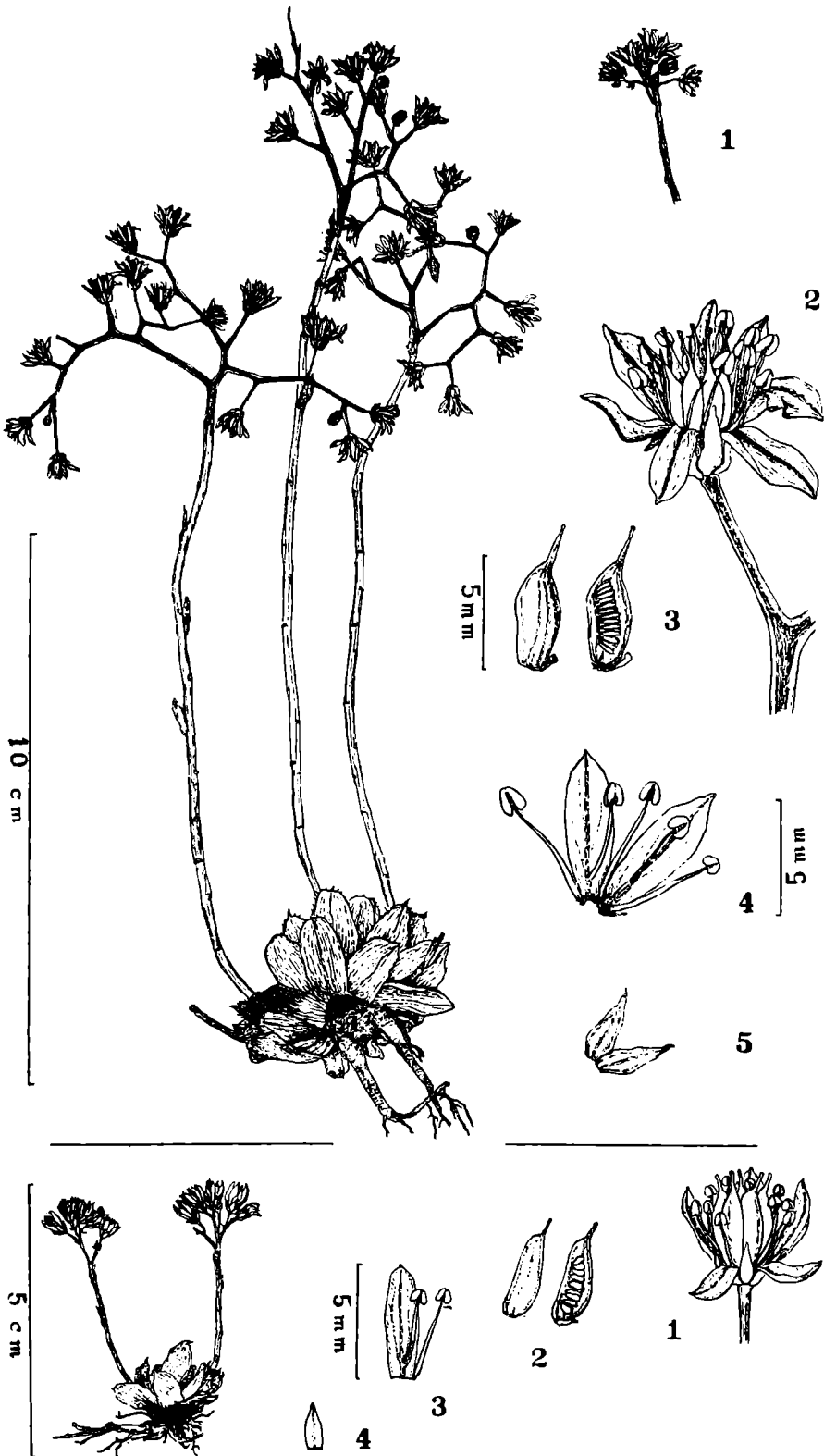


Fig. 57. Upper : *Sempervivum mucronatum* var. *glabrum* Kitam. : 1 Young Inflorescence, 2 Flower, 3 Pistil and Vertical section of the same, 4 Petals with Stamens. 5 Sepal. (Nuristan : Between Pushuki and Kushitaki). Lower : *Sedum nuristanicum* Kitam. : 1 Flower, 2 Pistill and Vertical section of the same, 3 Petal and Stamens, 4 Sepal. (Nuristan : Shabul Gul).

lata apice acuta basi non contracta, sessilia margine integra sub lente sparse papillosa, utrinque glabrata, textula crassiuscula, folia caulina alternatim disposita auguste oblonga 5–6 mm longa 1.5 mm lata apice obtusa apiculata basi sessilia et breviter producta (0.6 mm lg.) margine integra. Caules 4, ex axillibus foliorum rosulae ascendentes, 3.5–4 cm alti, glabri glauci longitudinaliter striati. Inflorescentia cymosa 1.5–1.6 cm lata, 5–8 flora. Flores hermaphroditi, pedunculis 2–3 mm longis. Sepala 5, oblongo-lanceolata 2 mm longa, apice acuminata basi breviter saccata, margine integra glabra. Petala 5, oblonga 5 mm longa 1.8 mm lata apice obtusa mucronulata purpureo-rosacentes in sicco. Stamina 10, petala breviora, antherae purpureo-rosacentes 0.4 mm longis 0.6 mm latis. Carpella 5 erecta polyovulata, supra $\frac{2}{3}$ libera. Stylus gracilis 0.8 mm longus apice capitatus.

Nuristan: Shabul Gul. circ. 2000 m alt. (Aug. 6, 1955 S. K.)—Typus in Herb. Univ. Kyoto.

Distr. Afghanistan.

This species differs from *S. pachyclados* by the acute entire leaves (not subulate), and by the purple-rose corolla. The Epipetalous stamens inserted 1 mm from the base. Nectar scales low broad.

Sedum pachyclados Ait. et Hemsl., J. L. S. XVIII: 58, XIX: Pl. 10–6–10.—Fröders, *Sedum* I: 21, Figs. 1–13, Pl. I–1 (1930).

Distr. Afghanistan (Kuram).

Sedum rosulatum Edgew. in Trans. Linn. Soc. XX: 48 (1846).—Aitch., J. L. S. XVIII: 58.—Clarke, F. B. I. II: 420.—Fröders, *Sedum* II: 25, Fig. 173–179, Pl. XII, 1–2 (1931).

Distr. Afghanistan (Kuram), Himalaya: from Kashmir to Bhutan.

Sedum tibeticum Hooker f. et Thoms. in J. L. S. II: 96 (1858).—Clarke, F. B. I. II: 418.

var. **Stracheyi** (Hooker f. et Thoms.) Clarke, l. c.—Wendelbo in Nytt Mag. Bot. I: 34 (1952).

Shabul Gul (Aug. 6, 1955 S. K.).

Distr. Afghanistan, Pakistan, W. Himalaya.

The writer collected only female individuals, and can not determinate with confidence. The stems caespitose from thick root stock, 5 cm in height, leaves many oblong 5–6 mm long, minutely papillose under the hand lense. Flowers numerous congested about 20, sepals and petals indistinguishable oblong 1.8 mm long 8–9, blackpurple, carpels 3–4, without stamen. This form also found in Swat Himalaya and Karakoram.

Sempervivella mucronata (Edgew.) Berger in Pflanzenfam. 2 ed. 18a: 467 (1930).—Wendelbo in Nytt Mag. Bot. I: 35 (1952).

Sempervivum mucronatum Edgew. in Trans. Linn. Soc. XX, 1: 49 (1846).—Clarke, F. B. I. II: 423.

var. **glabrum** Kitamura var. nov. **Fig. 57**, upper.

Folia radicalia spatulato-oblonga apice mucronata margine ciliata 8–15 mm longa 5–9 mm lata, folia caulina alterna anguste oblonga 7–8 mm longa 2.5–3 mm lata apice obtusa vel acuta basi producta. Flores 7–9 mm diametro, sepala oblongo-lanceolata 2.5–2.8 mm longa glabra apice acuta basi breviter producta flavo-viridia in sicco, petala lanceolata 5 mm longa apice obtusiuscula mucronato-incurva, alba, purpureo-striata in sicco.

Nuristan : Between Pushuki and Kushitaki (Aug. 4. 1955 S. K.).

Distr. Afghanistan, Pakistan.

The plant of Nuristan is the same as the plant of Pakistan mentioned by Wendelbo. As pointed out already by Wendelbo, our plants have glabrous sepals. Aitchison reported *Sempervivella acuminata* from Kuram (J. L. S. XVIII: 59 sub *Sempervivo*), this may be *S. mucronatum* var. *glabrum*.

The writer have examined many specimens from Swat Himalaya collected recently. These are very variable in size. Stem 6–25 cm long. Leaves up to 30 cm long 8 mm broad. Petals are sometimes red purple. The sepals are always glabrous. This race (from Afghanistan to Karakoram) is regionally distinct.

Saxifragaceae by Hiroshi Hara

Bergenia lingulata (Wall.) Engler in Bot. Zeitg. XXVI: 840 (1868).—Rech. f., Symb. Afgh. IV: 53 (1959).

Saxifraga lingulata Wall. in Asiat. Research XIII: 398 (1820).—Hooker, Exot. Fl. I: t. 49 (232).—Clarke, F. B. I. II: 398.—Aitch., J. L. S. XVIII: 56.

Bergenia himalaica Boriss. in Notulae Syst. Kom. XVI: 98 (1954).

Nuristan : Chatrass (Aug. 10, 1955 S. K.).—Leaves only, leaves orbicular, cordate at the base, margin ciliate, glabrous on both sides.

Distr. Afghanistan (E), Himalaya : from Kashmir to Bhutan, Khasia Mts.

Bergenia Stracheyi (Hooker f. et Thoms.) Engler in Bot. Zeitg. XXVI: 842 (1868).—Rech. f., l. c. 53.

Saxifraga Stracheyi Hooker f. et Thoms. in J. L. S. II: 61 (1857).—Aitch., J. L. S. XIX: 162.

Distr. Afghanistan (E), Pakistan : Karakoram, Himalaya : from Kashmir to Kumaon.

Parnassia Laxmanni Pallas ex Schultes, Syst. Veg. VI: 696 (1820).—Losinsk. in Fl. URSS IX: 219 (1939).—Rech. f., l. c. 54.

P. ovata Ledeb. ; Clarke, F. B. I. II: 403.—Aitch., J. L. S. XVIII: 57.

Nuristan : Chatrass to Kushimaicot (Aug. 2, 1955 S. K.).

Distr. Afghanistan (E), Karakoram, Central Asia, Himalaya, Siberia, Tibet, Mongolia and W. China.

A few individuals collected from Nuristan come near to var. *subacaulis* (Kar. et Kir.) Trautv.

Parnassia nubicola Wall. ex Royle, Ill. Himal. Mount. 227, t. 50 (1835).—Rech. f., l. c. 54.

Distr. Afghanistan (Nuristan), Himalaya: from Kashmir to Sikkim.

Parnassia palustris L., Sp. Pl. 273 (1753).—Rech. f., l. c. 216.

Distr. Northern Hemisphere.

Ribes alpestre Decaisne ex Jacquemont, Voy. Ind. Bot. IV: 64, t. 75 (1844).

‘*Ribes Grossularia* L.’ Clarke, l. c. 410 (1872).—Aitch., J. L. S. XVIII: 57.

Distr. Afghanistan (E), Pakistan, Himalaya and W. & C. China.

Ribes orientale Desfontaines, Hist. Arb. II: 88 (1809).—Boiss., F. O. II: 817.—Clarke, F. B. I. II: 410.—Aitch., J. L. S. XVIII: 57.—Losinsk. in Fl. URSS IX: 257 (1939).

Nuristan: Between Pushuki and Kushitaki (Aug. 4, 1955 S. K.), between Pushuki and Kushimaicot (Aug. 4, 1955 S. K.), between Chatrass and Kushimaicot (Aug. 2, 1955 S. K.).

Distr. Greece, Caucasus, SW & C. Asia, Himalayas, Tibet, Mongolia and W. China.

Some specimens from Nuristan have nearly glabrous berries, and are referable to var. *heterotrichum* (C. A. Meyer) Jancz.

Rechinger reported *R. melananthum* Boiss. et Hohen. from Afghanistan in Symb. Afgh. IV: 53.

Ribes nigrum L., Sp. Pl. 201 (1753).—Rech. f., l. c. 54. Reich., Ic. Germ. XXIII: t. 137.

Distr. Afghanistan, Eurasia.

Ribes villosum Wall. in Roxb., Fl. Ind. I ed. II: 514 (1824).—A. Los., l. c. 259, Tab. XV-4 (1939).—Rech. f., l. c. 54.

Distr. Afghanistan Pam.-Al., Pakistan, W. Himalaya.

Saxifraga afghanica Aitchison et Hemsl., J. L. S. XVIII: 56, XIX, Pl. IX, Fig. 6-12.—Engler et Irmscher in Pflanzenreich Heft 69: 570, Fig. 116 F (1919).

Distr. Pakistan (Kuram).

Saxifraga Hirculus L. var. **alpina** Engler, Mongr. Gatt. Sax. 124 (1872), Pflanzenreich Heft 67: 111, Fig. 22, P. Q (1916).—Rech. f., l. c. 53.

Distr. Afghanistan (E), Pakistan, Himalaya: from Kashmir to Sikkim.

Saxifraga Komarovii A. Los. in Fl. URSS IX: 162, 486, Tab. IX-10 (1939).—Rech. f., l. c. 53.

Distr. Pam.-Al., Afghanistan (Nuristan).

Saxifraga sibirica L., Sp. Pl. 2 ed. 577 (1762).—A. Los., l. c. 171, Tab. IX-6 (1939).—Rech., f., l. c. 53.

Distr. Eurasia.

Hamamelidaceae

Parrotiopsis Jacquemontiana (Decne.) Rehder in Journ. Arnold Arb. I: 256 (1920).

Parrotia Jacquemontiana Decaisne in Jacquem., Voy. Inde IV : 73, t. 82 (1844).
—Clarke, F. B. I. II : 426.—Aitch., J. L. S. XVIII : 59.

Distr. Pakistan (Kuram etc.), Kashmir.

Not yet found from Afghanistan. The writer examined many specimens from Swat Himalaya.

Platanaceae

Platanus orientalis L., Sp. Pl. 998 (1753).—Aitch., J. L. S. XVIII : 94.

Platanus orientalis Dode in Bull. Soc. Dendr. Fr. 1908 : 57.—Palikin. in Fl. URSS IX : 276.

Between Doab and Pulikhumri (June 26, 1955 S. K.).

Distr. Asia Minor, Central Asia, Iran, Afghanistan, Pakistan, Kashmir.

Aitchison reported that *P. orientalis* was cultivated in Kuram and not indigenous. But the writer observed wild trees along Bamian river. The lower branches were well developed, so the plants were broadly deltoid. The leaves have dentate 5-lobes. The wild plants are called Pungah-Chenar. The writer also observed many cultivated plants at villages. The cultivated plants grow well upwards and are usually very tall, with well developed lateral branches. The shade made by a large platanus is used for the office of the village. The cultivated plant is called Charmuzh (in Kabul). The specimens from Pakistan, Hunza collected by S. Nakao and those cultivated in Quetta have leaves also with dentate 5-lobes. The heads including styles about 3 cm in diameter.

Rosaceae

Agrimonia Eupatorium L., Sp. Pl. 448 (1753).—Aitch. in J. L. S. XVIII : 54 (1885).—Boiss., F. O. II : 727.—Hooker f., F. B. I. I : 361.—Hegi, Ill. Fl. IV₂ : 931 (1923).

A. pilosa Aitchison (non Ledeb.), l. c.

Nuristan, Between Trokikorl and Chatrass (Aug. 1, 1955 S. K.).

Distr. Europe, North Africa, Asia Minor, Iran, Caucasus, Afghanistan.

A. Eupatorium is variable, with many subspecies in different parts of the Northern Hemisphere.

Juzepchuk treated the Central Asiatic plant as *A. asiatica* Juz. in Fl. URSS X : 412 (1941).

The plant of Nuristan is an intermediate form between *A. Eupatorium* and *A. pilosa* (the latter should be treated as subsp. *dahurica* O. Kuntze).

Stem 35–40 cm densely hirsute with patent hairs slightly glandular. Leaves crowded in the lower part of the stem, leaflets obovate, hairy on both sides, dotted by glands on the underside. Flowers 8 mm in diameter. Fruits 6 mm long with erect bristles 4 mm in diameter, hypanthium pulverulent pilose.

Cotoneaster Aitchisoni Schneider, Ill. Hand. Laubholz. I : 749, Fig. 420 m₁–m₂.

Cotoneaster tomentosa Aitchison (non Lindley), J. L. S. XIX: 162 (1882).

Distr. Afghanistan.

Cotoneaster Lindleyi Steudel, Nomencl. Bot. I: 426 (1840) p. p.—Schneider, Ill. Handb. Laubh. I: 757, fig. 424a–b, 425 a–a' (1906).—Rehder, Bibl. Cult. Trees and Shrubs 237a (1949).

C. insignis A. Pojark. in Fl. URSS IX: 330 (1939).

Cotoneaster bacillaris Aitchison (non Willd.), J. L. S. XVIII: 56 (1880).

Nuristan: Between Pushuki and Kushimaicot (Aug. 9, 1955 S. K.).

Distr. Afghanistan (E), Himalaya: Kashmir, Tianshan, Pam.–Al.

Cotoneaster racemiflora (Desf.) K. Koch, Dendr. I: 170 (1869).—Pojarkova in Fl. URSS IX: 331 (1939).—Rehder, Manual 2 ed. 354 (1951).

var. **hissarica** (Pojark.) Kitamura stat. nov.

Cotoneaster hissarica Pojark. in Not. Syst. Herb. Kom. XVI: 124, Fig. 7 (1954).

Nuristan: Chatrass (Aug. 2, 1955 S. K.), between Trokikorl and Chatrass (Aug. 1, 1955 S. K.), between Voma and Trokikorl (July 31, 1955 S. K.).

Distr. Pam.–Al., Tianshan, Afghanistan.

var. **suavis** (Pojark.) Kitamura stat. nov.

Cotoneaster suavis Pojark., l. c. 118, Fig. 5, 6.

C. nummularia (non F. et M.) Aitch., T L. S. n. III: 64, pl. 9.

Nuristan: Between Chatrass and Budigrah (Aug. 2, 1955 S. K.), between Kushi- maicot and Pushuki (Aug. 3, 1955 S. K.).

Distr. Pam.–Al., Tianshan, China: Shinkiang (Kuldsha), Afghanistan, Trans- caucasus.

var. **subuniflora** Kitamura var. nov.

Ramus junior dense tomentosus demum glabratus purpureus. Folia late obovata 6–10 mm longa 7–11 mm lata apice emarginata mucronulata basi rotundato-truncata supra atro-viridia subtus glauca adpresse pilosa, petiolis 1.5–2 mm longis. Fructus plerumque solitarii rarius bini, oblongi 4–5 mm longi, 3–4 mm diametro, seminibus 2, pedicellis 2–3 mm longis pilosis.

Nuristan: Between Kandai and Seprigal (July 28, 1955 S. K.)—Typus in Herb. Univ. Kyoto.

Distr. Afghanistan.

This variety is related to var. nummularioides (Pojark.) Kitamura (*C. nummu- larioides* Pojark., l. c. 128, Fig. 8), but differs from it by usually one-flowered branches.

Distr. sp. Caucasus, North Africa, Asia Minor, Syria, Iran, Central Asia: Dz.- Tarb., Gorn.–Turkm., Pam.–Al., Tianshan, Pakistan, Singkiang, Himalaya: from Kashmir to Nepal.

Crataegus songarica C. Koch in Verh. Verz. Beförd. Gartenb. Preuss. n. ser. I: 287 (1853).—Pojark. in Fl. URSS IX: 449, Tab. XIX–Fig. 5 (1939).

C. Fischeri Schneider, Ill. Handb. Laubh. I: 789 (1906).

C. oxyacantha Aitchison (non L.), J. L. S. XVIII: 56 (1880), T. L. S. n. III: 641 (1888).

Nuristan: Chatrass (Aug. 2, 1955 S. K.)—with fruits, Charikar (July 11, 1955 S. K.)—without fr., Kabul, Tomb of Baber cult. (July 14, 1955 S. K.)—with fruits. Distr. Afghanistan, Iran, Dz.-Tarb., Pam.-Al., Tianshan, Dz.-Kash., Kuldza.

Crataegus turkestanica A. Pojark. in Fl. URSS IX: 504 (1939).

Doab, cult. (June 24, 1955 S. K.).

Distr. Afghanistan, Iran, Gorn.-Turkm., Pam.-Al., Tianshan.

Crataegus Wattiana Hemsl. et Lace, J. L. S. XXVIII: 323, Pl. 40 (1891).—Rehder, Manual 2 ed. 369 (1940).

Kabul, Dal-ul-Aman cult. (July 18, 1955 S. K.).

Distr. Pakistan.

Cydonia oblonga Miller, Gard. Dict. 8 ed. (1768).—Rehder, Manual 2 ed. 400 (1940).

Pyrus Cydonia L., Sp. Pl. 480 (1753).—Aitch., T. L. S. n. III: 63 (1888).

Kunduz cult. (July 6, 1955 S. K.). Native name Behi.

Distr. Transcaucasia, Iran, Turkestan, Arabia.

Duchesnea indica Focke in Engler & Prantl, Pflanzenfam. III-3: 33 (1888).—Kitamura in Fauna and Flora of Nepal Himalaya 148 (1955).—Juz. in Fl. URSS X: 67, Tab. VI-6 (1941).

Fragaria indica Andrew, Bot. Rep. t. 479 (1807).—Aitch., J. L. S. XVIII: 52 (1880).

Distr. sp. Caucasus, Afghanistan, India, Himalayas, Assam, Malaya, China, Japan.

Filipendula vestita Maxim. in Acta Horti Petrop. VI: 248 (1879).—Hand.-Mzt., Symb. Sin. Anth. III: 523 (1933). **Fig. 29.**

Spiraea vestita Wall. ex Hooker f., F. B. I. II: 323 (1878).—Aitch., J. L. S. XVIII: 52.

Spiraea kamtschatica var. *himalaiensis* Lindley in Bot. Reg. 1841, t. 4.

Nuristan: Between Kushimaicot and Pushuki (Aug. 3, 1955 S. K.), between Trokikorl and Chatrass (Aug. 1, 1955 S. K.), between Voma and Chatrass (Aug. 1, 1955 S. K.).

Distr. Afghanistan, Himalaya: from Kashmir to Kumaon, China: Ynnan.

Fragaria vesca L., Sp. Pl. 494 (1753).—Aitch., J. L. S. XVIII: 52.—Juz. in Fl. URSS X: 59, t. VI-I (1941).

Nuristan: Between Kushimaicot and Pushuki (Aug. 3, 1955 S. K.)—with fr., Trokikorl (July 31, 1955 S. K.)—sterile.

Distr. Europe, Dz.-Tarb., Tianshan, Caucasus, Iran, Afghanistan, Siberia (Japan introduced).

Geum urbanum L., Sp. Pl. 501 (1753).—Aitch., J. L. S. XVIII: 52.—Boiss., F. O. II: 696.—Hooker f., F. B. I. II: 342.—Juz., Fl. URSS X: 240 (1941).

Nuristan : Chatrass (Aug. 2, 1955 S. K.).

Distr. Europe, North Africa, Asia Minor, Iran, Afghanistan, Western Siberia, Central Asia, Dz.-Tarb., Tianshan, Pamiro-Al., Gorn.-Turkm., Himalaya : from Kashmir to Kumaon.

Malus pumila Miller, Gard. Dict. 8 ed. (1768).—Schneider, Ill. Hand. Laubholz. I : 715, fig. 397 c-h (1906).

Pyrus Malus L., Sp. Pl. 479 (1753).—Aitch., J. L. S. XVIII : 55, T. L. S. n. III : 63.

Kunduz cult. (July 6, 1955 S. K.)—native name Seb. Nuristan : Between Pushuki and Kushimaicot (Aug. 9, 1955 S. K.)—wild.

The Afghan apples are usually very small 4–5 cm in diameter, like the Japanese and Chinese old cultivated race called *M. pumila* var. *dulcissima* Koidz.

The Japanese and Chinese old race had been introduced from Central Asia through the silk road about 2000 years ago.

Aitchison reported that *M. pumila* is wild in the hills around Kushk and above Balamorghab. The writer observed wildly growing *M. pumila* in Nuristan. The leaves are small 7–8.5 cm long including petioles. The fruits are 2–2.2 cm in diameter, not good to eat.

Distr. Western Asia, Central and Southern Europe.

Potentilla argyrophylla Wall. ex Lehm., Monogr. Pot. Suppl. I : 19, t. 9 (1835).—Aitch., J. L. S. XVIII : 53.—Hooker f., F. B. I. II : 356.—Wolf in Bibl. Bot. Heft 71 : 228 (1908).

P. Jacquemontiana Camb. in Jacq., Voy. IV : 51, t. 63 (1844).

Distr. Pakistan (Kuram), Himalaya : Kashmir to Nepal.

Potentilla bifurca L., Sp. Pl. 497 (1753).—Boiss., F. O. II : 707.—Hooker f., F. B. I. II : 353.—Wolf in Bibl. Bot. Heft 71 : 63 (1908).—Juz. in Fl. URSS X : 811, Tab. VII–4 (1941).—Wendelbo in Nytt Mag. I : 38 (1951).

Nuristan : Eschtaway (Aug. 7, 1955 S. K.), between Pushuki and Kushitaki (Aug. 4, 1955 S. K.)—foliola 5-juga.

Distr. Europe, Asia Minor, Iran, Afghanistan, Himalaya : Kumaon, Sikkim, Siberia, Tibet, Mongolia.

Potentilla caelestis Gilli in Fedde, Rep. Bd. LIX : 190 (1957).

Distr. Afghanistan.

Potentilla Colletiana Aitch. et Hemsl., J. L. S. XVIII : 53 (1880).—Wolf in Bibl. Bot. Heft 71 : 95, t. IX, f. 2.

Distr. Afghanistan (Kuram).

Potentilla gelida C. A. Mey., Ind. plant. in Cauc. et ad mare Casp. collect. 167 (1831).—Hooker f., F. B. I. II : 537.—Wolf in Bibl. Bot. Heft 71 : 535 (1908).—Juz. in Fl. URSS X : 199, Tab. XV–1 (1941).—Wendelbo in Nytt Mag. Bot. I : 40 (1952).

Nuristan : Shabul Gul circ. 4000 m (Aug. 6, 1955 S. K.).

Distr. Caucasus, Arm.-Kurd., Siberia, Daur., Ang.-Sayan, Central Asia : Dz.–

Tarb., Tianshan, Pam.-Al., Dzung.-Kash., Afghanistan, Himalaya: Kashmir to Kunawar.

Potentilla Gerardiana Lindley ex Lehm., Rev. Pot. 42 (1856).—Wolf in Bibl. Bot. Heft 71: 318, t. VIII-1 (1908).

P. fragarioides Hooker f. (non L.), F. B. I. II: 350 (1878).

P. fragarioides var. *Gerardiana* Aitch., J. L. S. XVIII: 53

Nuristan: Between Trokikori and Chatrass (Aug. 1, 1955 S. K.).

Distr. Afghanistan, Pakistan, Himalaya: from Kashmir to Bhutan.

Potentilla kuramensis T. Wolf in Bibl. Bot. Heft 71: 527, t. XIX, f. 2 (1908).

P. monanthes Aitchison (non Lindley), J. L. S. XVIII: 53 (1880).

Distr. Afghanistan (Kuram).

Potentilla multifida L., Sp. Pl. 496 (1753).—Aitch., J. L. S. XVIII: 53.—Wolf in Bibl. Bot. Heft 71: 154 (1908).—Juz. in Fl. URSS X: 114, Tab. IX-2 (1908).—Kitamura in Fauna and Flora of Nepal Himalaya 152 (1955).

Nuristan: Eschtaway (Aug. 7, 1955 S. K.)—exterior sepals (1.5 mm lg.) are shorter than interior ones (3 mm lg.).

Distr. Europe, Siberia, Darin-Vostok, Mong., China, Alaska, Central Asia: Dz.-Tarb., Tianshan, Pam.-Al., Gorn.-Turkm., Iran, Afghanistan, Himalayas.

Potentilla reptans L., Sp. Pl. 499.—Boiss., F. O. II: 723.—Aitch., J. L. S. XVIII: 53.—Hooker f., F. B. I. II: 356.—Wolf, l. c. 654 (1908).—Juz. in Fl. URSS X: 219, t. XVI-4 (1941).

Eastern Prov.: Kandai (July 27, 1955 S. K.).

Distr. Europe, North Africa, Caucasus, Siberia, Central Asia, Iran, Afghanistan, Himalayas.

Potentilla sericea L., Sp. Pl. 495 (1753).—Aitch., J. L. S. XVIII: 53 (1850).—Hooker f., F. B. I. II: 354.—Wolf, l. c. 161 (1908).—Juz. in Fl. URSS X: 120 (1941).

Nuristan: Shabul Gul (Aug. 6, 1955 S. K.).

Distr. Siberia, Altai, Dz.-Tarb., Tianshan, Afghanistan, Himalaya: Kashmir to Kumaon, Tibet.

Potentilla supina L., Sp. Pl. 497 (1753).—Aitch., J. L. S. XVIII: 53.—Boiss., F. O. II: 725.—Hooker f., F. B. I. II: 359.—Wolf, l. c. 389 (1908).—Juz. in Fl. URSS X: 165.

Between Bulola and Doab (June 26, 1955 S. K.), between Doab and Pulikhumri (June 26, 1955 S. K.), Pulikhumri (July 5, 1955 S. K.).

Distr. Europe, North Africa, Caucasus, Siberia, Darin-Vostok, Central Asia, India, Himalayas, China: Yunnan, Szechan.

Poterium polygamum Wald. et Kit., Pl. Hung. II: 117, t. 197 (1805).—Juz. in Fl. URSS X: 430 (1941).

P. muricatum Spach in Ann. Sci. Nat. Sér. III, V: 36 (1846).—Boiss., F. O.

II: 733.

Sangisorba minor Scopoli subsp. *muricata* Asch. et Graebner.—Hegi, Ill. Fl. IV₂: 941, Fig. 1185 e, f, g.

P. Sangisorba Aitchison (non L.), T. L. S. n. III: 62.

Between Doab and Pulikhumri (June 26, 1955 S. K.), between Siyagird and Charikar (July 11, 1955 S. K.), Lataband Pass (June 15, 1955 S. K.).

Distr. Europe, Asia Minor, Caucasus, Syria, Iran, Afghanistan, Tianshan, Pam.-Al., Syr-Dar., Gorn.-Turkm.

Prunus Aitchisoni (Korsh.) Kitamura comb. nov.

Amygdalus Aitchisoni Korsh. in Bull. Acad. Pétersb. Sér. 5, XIV: 94 (1901).

Distr. Afghanistan.

Prunus Amygdalus Batsch, Beytr. Entw. Pragm. Gesch. Natur-Reiche I: 30 (1801).—Aitch., T. L. S. n. III: 62.

Amygdalus communis L., Sp. Pl. 473 (1753).—Linch. & Fed. in Fl. URSS X: 524, Tab. XXXIII-1 (1941).

Mazarisharif, cult. (June 30, 1955 S. K.).

Distr. A native of Western Asia (Afghanistan, Iran, Asia Minor, Gorn.-Turkm, Tianshan).

The writer purchased the fruits of Almond (both sweet and bitter) in Afghan markets. The size of fruits was not constant. The native name Badam.

Prunus Armeniaca L., Sp. Pl. 474 (1753).—Aitchison, J. L. S. XVIII: 51, T. L. S. n. III: 61.—Hegi, Ill. Fl. Mittel-Europ. IV₂: 1097 (1923).

Amygdalus vulgaris Lam., Encycl. Méth. Bot. I: 2 (1789).—Kostina in Fl. URSS X: 586, Tab. XXXVIII, fig. 1 (1941).

Pulikhumri cult. (July 4, 1955 S. K.)—without fruits. Nuristan: Between Chatrass and Kushimaicot (Aug. 2, 1955 S. K.)—with fruits, wildly growing along Pech River.

Distr. A native of North China and now naturalized in Western and Central Asia, introduced through the silk road in ancient times (2000 years ago).

There are many excellent cultivated varieties in Afghanistan and Pakistan, as well as in Europe and Western and Central Asia. There are varieties with edible kernels in Afghanistan.

The native names for various cultivated varieties are Alubkhara (flesh adhering), Zardaru, Kaishi, Zardam (bitter Apricot), Gholing etc.

Prunus avium L., Fl. suec. 2 ed. 165 (1755).—Hegi, Ill. Fl. IV₂: 1078, T. 157-1.

Prunus Cerasus var. *avium* L., Sp. Pl. 474 (1753).—Aitch., J. L. S. XVIII: 51 (1880).

Pagman near Kabul cult. (May 20, 1955 K. Yamashita)—fl., the same (July 15, 1955 S. K.)—fruits, Kabul cult. (June 22, 1955 S. K.).

Distr. Europe, Western Asia, cultivated in Afghanistan.

The writer purchased the fruits (small, purple black, flesh sweet) in markets.

Prunus bucharica (Korsh.) Fedtschenko ex Rehder, Man. Cult. Trees and Shrubs 2 ed. 465 (1940).

Amygdalus bucharica Korshinsky in Bull. Acad. Sci. St. Pétersb. sér. 5, XIV: 92 (1901).—Linchevski & Fedorov in Fl. URSS X: 529 (1941).

Distr. Gorn.—Turkm., Pam.—Al., Afghanistan.

Prunus calycosus Aitch. et Hemsl. in T. L. S. n. III: 61, Tab. 8 (1888).

Distr. Afghanistan (W). Native name Sioh-ling.

Prunus cerasifera subsp. **divaricata** Schneider, Ill. Hand. I: 632, fig. 348 d-e, 349 g (1906).—Hegi, Ill. Fl. IV₂: 1100, fig. 1269 (1923).

Prunus divaricata Ledeb. in Index Sem. Hort. Dorpat. 1824: 6 (1824), Ic. Fl. Ross. t. 13 (1829).—Aitch., T. L. S. n. III: 60 (1888).—Kovalev in Fl. URSS X: 516, Tab. XXXII, fig. 2 (1940).

P. cerasifera var. *divaricata* (Ledeb.) Bailey, Cycl. Am. Hort. (3): 1447 (1901).—Rehder, Manual 2 ed. 456 (1940).

Distr. Caucasus, Gorn.—Turkm., Pam.—Al., Asia Minor, Armenia—Kurd., Iran, cult. in Afghanistan. The writer saw the small yellow fruits sold at Kunduz.

Prunus domestica L., Sp. Pl. 475.—Rehder, Manual 2 ed. 456 (1940).—Hegi, Ill. Fl. Mittel-Europ. IV₂: 1106 (1923).

P. communis Hudson, Fl. Ang. 212 (1762).—Aitch., J. L. S. XVIII: 51.

Kunduz cult. (July 6, 1955 S. K.)—Branches glabrous. Fruits yellow green tinged with red, when dried, bluish black, the flesh adhering.

Distr. A native of Central Asia, largely cultivated in Afghanistan and Pakistan. Native name Alucha. Many kinds were sold at the markets, for example; Skin dull red purple 5.7 cm high, 5 cm in diameter; Skin yellow orchard 5.2 cm high, 4.8 cm in diameter, flesh adhering.

Prunus eburnea Aitch. et Hemsl., T. L. S. n. III: 62.—Schneider, Ill. Hand. I: 599.—Hemsl. et Lace, J. L. S. XXVIII: 315 (1891).

Amygdalus eburnea Spach in Ann. Sc. Nat. sér. 2, XIX: 123 (1843), Ill Fl. Orient. III: t. 229 (1847–50).

var. *floribus solitariis*.

Distr. Afghanistan, Iran, Pakistan: Chaman Pass 7000 feet (May 31, 1955 S. K.).

Prunus Jacquemontii Hooker f., F. B. I. II: 314 (1878).—Aitch., J. L. S. XVIII: 51.—Schneider, Ill. Handb. I: 601, fig. 337_{i-k}, 338_a (1906).

Cerasus Jacquemontii (Hooker f.) Buser in Boiss., F. O. Suppl. 198 (1888).—Pojark. in Fl. URSS X: 572 (1941).

Nuristan: Chatrass (Aug. 2, 1955 S. K.).

Distr. Afghanistan, Pam.—Al., Pakistan, Himalaya: Garwal, Niti, Kunawar.

var. **bifrons** (Fritsch) Ingram in Gard. Chron. ser. 3, 120: 162, fig. 72 (1946).

—Rehder, Bibl. Cult. Trees and Shrubs: 322 a (1949).

Prunus prostrata Hooker f., F. B. I. II: 313 p. p.—Aitch., T. L. S. n. III: 60 (non Labill.).

Prunus afghana Cardot in Not. Syst. Mus. Nat. Paris IV: 32 (1920).

Cerasus bifrons (Fritsch) Pojarkova in Fl. URSS X: 570 (1941).

P. bifrons Fritsch in Sitzber. Akad. Wiss. Wien 101: 637, t. 3, fig. 1 (1892).

P. prostrata var. *bifrons* (Fritsch) Schneider, Ill. Hand. I: 604, fig. 337 e-h.

Nuristan: Between Pushuki and Kushitaki (Aug. 4, 1955 S. K.), Eschtaway (Aug. 5, 1955 S. K.).

Distr. Afghanistan, Pakistan, Kashmir.

Prunus kuramica (Korsh.) Kitamura comb. nov.

Amygdalus kuramica Korsh. in Bull. Acad. Sci. St. Pétersb. sér. 5, XIV: 93 (1901).

Nuristan: Chatrass (Aug. 2, 1955 S. K.).

Distr. Afghanistan.

In Nuristan, this species is abundant along Pech River. Stamens 30. Calyx tube 5 mm long, inside tomentose, outside glabrous, lobes deltoid, 3.5 mm long, obtuse margin densely hairy, inside glabrous. The fruits are small 15–16 mm long 11–12 mm broad, shortly peduncled. The shells 14 mm long, 10–11 mm broad. Seed 10 mm long 6 mm broad.

Prunus microcarpa C. A. Mey., Verz. Pflanz. Caucas. 167 (1831).—Aitch., T. L. S. n. III: 61.—Schneider, Ill. Handb. I: 604, fig. 337_{a-l}, 338 f (1906).

Cerasus microcarpa Boiss., F. O. II: 646 (1872).—Pojark. in Fl. URSS X: 563 Tab. XXXVI, fig. 2 (1941).

Distr. Caucasus, Gorn.-Turkm., Arm.-Kurd., Iran, Afghanistan.

var. ***tortuosa*** (Boiss. & Haussk.) Schneider, l. c. fig. 337_{m-z}, 338_{g-h} (1906).

Prunus tortuosa Aitch. et Hemsl., T. L. S. n. III: 61.

Cerasus tortuosa Boiss. & Haussk., F. O. II: 647 (1872).

Distr. Asia Minor, Syria, Iran, Afghanistan (W).

Prunus Padus L., Sp. Pl. 473 (1753).—Aitch., J. L. S. XVIII: 51.

Distr. Eurasiatic, Pakistan (Kuram).

Prunus Persica (L.) Batsch, Beytr. Entw. Pragm. Gesch. Natur. 30 (1801).—Rehder, Manual 2 ed. 463 (1940).—Aitch., J. L. S. XVIII: 51, in T. L. S. n. III: 62.

Pulikhumri (July 3, 1955 S. K.).

Distr. A native of China. The writer purchased peaches in the markets of Mazarisharif. The native name was Shaftalu. He was interested in the old garden race. The fruits were small 4.6 cm high, 4.3 cm in diameter, skin dark red, pubescent, fresh white sweet separating from the stone, the stone 3 cm long 2.2 cm broad. This may be an old race introduced from China. In Kunduz, the writer observed

many peach-trees recently introduced from Pakistan. The fruits were of modern types.

Prunus salicina Lindley in Trans. Hort. Soc. Lond. VII: 239 (1828).

P. bokhariensis Schneider, Ill. Hand. I: 627 (1906).—Rehder, Manual 2 ed. 457. Kunduz cult. (July 6, 1955 S. K.).

Distr. A native of China.

The writer observed well grown *P. bokhariensis* in the experimental farm of Kunduz. The leaves were oblanceolate-oblong, acuminate at the apex, hairy along the midrib. Fruits were large and numerous, skin glaucous-green waxy, when ripened, a little reddish, 4–4.2 cm high, 4–4.1 cm in diameter, peduncle 13 mm long.

Prunus turcomanica Lincz. in Fl. URSS X: 639 (1941).

Prunus Brauchia var. calyce omnino glabro Aitch. et Hemsl. et *P. eburnea* var. fructu flavo Aitch. et Hemsl., T. L. S. n. III: 62 (1888).

Distr. Afghanistan, Turcomania.

Pyrus communis L., Sp. Pl. 459 (1753).—Aitch., J. L. S. XVIII: 55, Trans. L. S. n. III: 63.—Rehder, Bibl. Trees and Shrubs 280 (1949).—Maleiev in Fl. URSS IX: 338 (1939).

Kunduz, Experimental Farm cult. (July 8, 1955 S. K.).

Distr. A native of Europe and Western Asia.

In Kunduz there were old types with small fruits and recent types with large fruits.

Rosa Beggeriana Schrenk in Enum. Pl. Nov. 73 (1841).—Schneider, Ill. Handb. Laubh. I: 573 (1906).—Juzepchuk, Fl. URSS X: 462, Tab. XXIX, fig. 3 (1941).—Aitch., J. L. S. XIX: 161, Pl. 7, T. L. S. n. III: 63.

R. anserinaefolia Crépin non Boiss. ex Aitch., J. L. S. XVIII: 54.

R. Beggeriana var. *Lehmaniana* Aitch., T. L. S. n. III: 63.

R. anserinaefolia Boiss., Diag. Ser. I, VI: 51 (1845), F. O. II: 677.—Hooker f., F. B. I. II: 365.

R. cabulica Boiss., F. O. II: 48 (1872).

Doab (June 24, 1955 S. K.), Pagman near Kabul (July 15, 1955 S. K.).

Distr. Iran, Afghanistan, Dz.-Tarb., Tianshan, Pam.-Al., Pakistan, Dz.-Kashg.

This Afghan rose is distinguished from *R. Webbiana* by hooked prickles, smaller glabrous calyx tube and deciduous calyx lobes.

Rosa canina L., Sp. Pl. 491 (1753).—Aitch., J. L. S. XVIII: 45.—Juzepchuk in Fl. URSS X: 502, Tab. XXXI, fig. 1 (1941).—Rehder, Bibl. Tr. Sh. 303b (1949). Charikar (July 11, 1955 S. K.).

Distr. Europe, North Africa, Caucasus, Asia Minor, Iran, Afghanistan, Pam.-Al.

Rosa chinensis Jaquin, Obs. Bot. III: 7, t. 55 (1768).—Rehder, Manual 2 ed. 449 (1940).

Pulikhumri cult. in Club Garden (July 4, 1955 S. K.).

Distr. A native of China. Introduced into Europe in 1768.

Rosa damascena Miller, Gard. Dict. 8 ed. (1768).—Willmott, Gen. Rosa II: 369, t. (1912).—Aitch., J. L. S. XVIII: 54, T. L. S. n. III: 62.

Distr. Old cultivated plant established at Western Asia. Cult. also in Afghanistan.

Rosa Ecae Aitchison, J. L. S. XVIII: 54 (1880), XIX: 161, t. 8 (1882).—Oliver in Hooker's Ic. Pl. XIV: 21, t. 1329 (1881).—Juz. in Fl. URSS X: 475 (1941).

Rosa xanthina sensu Hooker f. (non Lindley) in Bot. Mag. CXX: t. 7666 (1899).

Distr. Afghanistan, Pam.—Al.

Rosa foetida Herrmann, Diss. Bot. Med. Rosa 18 (1762).—Rehder, Bibl. Tr. Sh. 298a (1949).—Juz. in Fl. URSS X: 477.

Rosa Eglanteria L., Amoen. Acad. V: 220 (1760) non L.—Hooker f., F. B. I. II: 366.—Aitch., J. L. S. XVIII: 54.

Rosa lutea Miller, Gard. Dict. 8 ed. (1768).—Boiss., F. O. II: 671.—Aitch., T. L. S. n. III: 63.

Distr. Europe, Caucasus, Pam.—Al., Tianshan, Asia Minor, Armenia, Iran, Himalaya: from Kishtwar westwards, cultivated in Afghanistan.

Rosa lacerans Boiss. et Buhse in Nouv. Mém. Soc. Nat. Mosc. XII: 841 (1860), F. O. II: 677.—Juz. in Fl. URSS X: 463.

Distr. Afghanistan (W), Iran, Turkm.

Rosa macrophylla Lindley, Ros. Monogr. 35, t. 6 (1820).—Hooker f., F. B. I. II: 366.—Aitch., J. L. S. XVIII: 54.—Rehder, Bibl. Tr. Sh.: 309b (1949).—Kitamura, Fauna and Flora of Nepal Himalaya 157 (1955).

Distr. Afghanistan (Kuram), Pakistan, Himalaya: from Kashmir to Sikkim.

Rosa moschata Herrmann, Diss. Bot. Med. Rosa 15 (1762).—Miller, Gard. Dict. 8 ed. (1768).—Aitch., J. L. S. XVIII: 54 (1880), T. L. S. n. III: 63.

Distr. Afghanistan, Pakistan: Between Balin and Kalam 1450 m (July 15, 1957 G. Iwatsubo), Panjab, Muree 2200 m (May 27, 1955 S. Nakao), Gilgit (May 31, 1955 S. Nakao).

var. **Nastarana** Christ in Boissier, F. O. Suppl.: 229 (1888).

Pagman near Kabul cult. (July 15, 1955 S. K.).

Rosa moschata is very closely related to Himalayan *R. Brunoni* Lindley. The leaves of var. *Nastarana* of Afghanistan are glabrous on both sides, and have glandular and pubescent petioles.

Rosa multiflora Thunb., Fl. Jap. 214 (1784).

Kandahar cultivated (July 6, 1955 S. K.).—A garden form with pink double flower, pedicel densely glandulous.

Distr. A native of Japan and Korea.

Rosa Webbiana Royle, Ill. Bot. Himal. 208, t. 42, fig. 2 (1835).—Hooker f., F. B. I. II: 366.—Aitch., J. L. S. XVIII: 54, XIX: 161 (cum var. *microphylla* Crépín).

—Juz. in Fl. URSS X: 464 (1941).

Nuristan: Between Pronz and Eschtaway (Aug. 5, 1955 S. K.)—fl., between Pushuki and Kushitaki (Aug. 4, 1955 S. K.)—fr., Pagman near Kabul (July 15, 1955 S. K.).

Distr. Afghanistan (E), Tianshan, Dz.-Kashg., Tibet, Himalaya: from Kashmir to Kumaon, Pakistan, China, Mongolia. Introduced into Europe 1879.

This species is very widely distributed and commonly found in Eastern Hindukush and Western Himalaya. It has very beautiful pink flowers. The spine is straight and pale yellow. The calyx is glandular. The calyx lobes are persistent in fruit. Plants from Voma and Pagman have branches densely covered with glands. The leaflets are smaller. This form is also found in Pakistan.

Rubus caesius L., Sp. Pl. 706 (1753).—Aitch., T. L. S. n. III: 62 (1888).—Juz. in Fl. URSS X: 56, Tab. V, fig., 3 (1941).

Nuristan: Between Chatrass and Kushimaicot (Aug. 2, 1955 S. K.).

Distr. Europe, Western Siberia, Central Asia, Caucasus, Asia Minor, Iran, Afghanistan.

Rubus irritanus Focke in Bibl. Bot. Heft 72: 192 (1910).

R. purpureus Hooker f. (non Bunge), F. B. I. II: 337 pro parte.—Aitch., J. L. S. XVIII: 52, XIX: 161.

Distr. Afghanistan, Pakistan, Kashmir.

var. **nuristanica** Kitamura var. nov.

Folia ternata, foliola terminalis rhomboidea, obovata vel ovata 6–9 mm longa 4–7.5 cm lata apice breviter acuminata vel acuta, inaequaliter incisodentata supra adpresse pilosa subtus niveo-tomentosa. Inflorescentia glandulosa et dense pilosa. Achenia dense pilosa.

Nuristan: Between Trokikorl and Chatrass (Aug. 1, 1955 S. K.).

Distr. Afghanistan, Pakistan: Between Gakuch and Chataikand (Oct. 20–21, 1956 K. Honda)—steril.

The leaves are like those of *R. phaenicolasius* but the branches are not so longly and strongly hirsute.

Rubus niveus Thunb., Dissert. de Rubo 9, fig. 3 (1813).—Focke in Bibl. Bot. Heft 72: 182 (1910).

R. lasiocarpus Sm. in Rees Cycl. XXXII n. 6 (1819).—Hooker f., F. B. I. II: 339.—Aitchison, J. L. S. XVIII: 52.

Distr. Pakistan (Kuram), Himalaya: from Kashmir to Sikkim, Burma, Ceylon.

Rubus pedunculatus D. Don, Prodr. Fl. Nep. 234 (1825).—Kitamura, Fauna and Flora of Nepal Himalaya 158 (1955).

R. gracilis Roxb., Hort. Beng. 39 (1814) nom.—Focke in Bibl. Bot. Heft 72: 190 (1911), non Presl. (1822).

var. **Aitchisoni** (Hooker f.) Kitamura comb. nov.

R. niveus Wall. var. *Aitchisoni* Hooker f., F. B. I. II: 335 (1878).—Aitch., J. L.

S. XVIII: 52, XIX: 161.

Distr. Pakistan (Kuram), Kashmir.

Rubus ulmifolius Schott in Oken, Isis fasc. V: 821 (1818).—Focke in Bibl. Bot. Heft 83: 153 (1914) sensu ampl.

R. discolor Weich et Nees, Rub. Germ. 46, t. 20 (1822).—Boiss., F. O. II: 695.

R. fruticosus L. var. *discolor* Hooker f., F. B. I. II: 337.

R. fruticosus var. Aitch., J. L. S. XVIII: 52.

Eastern Prov. Kandai (July 27, 1955 S. K.).

Distr. sensu ampl. Europe, North Africa, Asia Minor, Mesopotamia, Iran, Afghanistan, Pakistan, Himalaya: from Murree to Jamu.

Sibbaldia cuneata Hornem. in Index sem. Hort. Hafn. (1842) et ex Kuntze in Linnaea XX: 59 (1847).—Murab. in Acta Inst. Bot. Acad. Sci. URSS Ser. 1, fasc. 2: 231 (1936).—Wendelbo in Nytt Mag. Bot. I: 40 (1952).

Sibbaldia parviflora Kitamura (non Willd.), Fauna and Flora of Nepal Himalaya 160 (1955).

Potentilla Sibbaldi Aitch. (non Haller), J. L. S. XVIII: 52.

Nuristan: Shabul Gul (Aug. 6, 1955 S. K.).

Distr. Afghanistan, Pam.-Al., Himalayas, Tibet, China: Yunnan, Sinkiang: Jarkand, Formosa.

Sorbaria Aitchisoni Hemsl. in Gard. Chr. ser. 3, XXVIII: 254, fig. 75 (1900) nom. alt.—Rehder in Möller's Deutsch. Gärtn.-Zeit. XVI: 17 fig. (1901).

Spiraea sorbifolia Aitch. (non L.), J. L. S. XVIII: 52.

Sorbaria angustifolia Zabel in Beissner et al., Handb. Laubh.-Ben. 163 (1903) Schneider, Ill. Hand. Laubh. I: 491 fig. 297 1-1', 299f (1905).

Distr. Afghanistan (Kuram), Kashmir.

Sorbaria tomentosa (Lindley) Rehder in Journ. Arnold Arb. XIX: 75 (1938).

Schizonotus tomentosus Lindley in Bot. Reg. XXVI (Misc.): 71 (1841).

Sorbaria sorbifolia Hooker f. (non L.), F. B. I. II: 324.

Nuristan: Between Trokikorl and Chatrass (Aug. 1, 1958 S. K.)—fl., between Seprigal and Voma (July 29, 1955 S. K.)—fr., between Siyagird and Charikar (July 11, 1955 S. K.)—fr.

Distr. Afghanistan, Pakistan, Himalaya: from Kashmir to Nepal.

Leaves doubly serrate.

Sorbus aucuparia L., Sp. Pl. 477 (1753).—Boissier, F. O. II: 657.—Hegi, Ill. Fl. IV₂: 798, t. 147-2 (1923).—Juz. in Fl. URSS X: 376 (1941).

Pyrus aucuparia Gaertn., Fruit. Sem. II: 45, t. 87 (1791).—Hooker f., F. B. I. II: 375.—Aitch., J. L. S. XVIII: 56.

Distr. Europe, Asia Minor, Caucasus, Western Siberia, Pakistan: Karakoram, Kuram, Himalaya: Kashmir to Kumaon.

Sorbus lanata (Don) S. Schauer in Uebers. Arbeit. Schles. Ges. Vaterl. Kult.

1847: 292 (1848).—Schneider, Ill. Hand. Laubh. I: 691, fig. 380 o–p, 383 a–b (1906).

Pyrus lanata Don, Prodr. Fl. Nep. 237 (1825).—Hooker f., F. B. I. II: 375.—Aitchison, J. L. S. XVIII: 55.

Nuristan: Between Kushitaki and Pronz (Aug. 4, 1955 S. K.).

Distr. Afghanistan, Pakistan, Himalaya: from Kashmir to Kumaon.

Spiraea Brahuia Boiss., F. O. II: 690.

var. **Boissieri** (Schneider) Kitamura stat. nov.

Spiraea Boissieri Schneider in Bull. Herb. Boiss. Sér. II, V: 341 (1905), Ill. Hand. Laubh. I: 461, fig. 292 q–q₃.

Spiraea Brahuia Aitchison (non Boiss.), J. L. S. XVIII: 52.

Distr. Afghanistan (Kuram).

var. **glaucophylla** Kitamura var. nov.

A var. Boissieri et var. Brahuia foliis latioribus glabris subtus glaucis, floribus minoribus distinguenda.

Suffrutex circ. 1 m altus e basi ramosus, ramis hornotinis glabris flexuosis rubro-brunnescentibus, annotinis interdum defoliatis spinescentibus, ramis vetustis demum cinerascens ad 5 mm diametro. Folia rami sterilis late ovata vel obovata 11–16 mm longa et lata apice obtusa basi late cuneata vel truncata margine 3–5 lobata, lobis obtuse mucronulato-dentatis vel subintegris, utrinque glabra, subtus glauca, petiolo 2–4 mm longo glabro. Folia rami fertilis circ. 1.6 cm longi, obovata 10–12 mm longa 7.5–9 mm lata apice tantum lobato-dentata basi late cuneata integra, utrinque glabra subtus glauca. Inflorescentia racemoso-umbellata 9–14 flora, pedicellis 4–5 mm longis glabratis vel parce pilosis, interdum bracteis linearibus 1 mm longis praeditis vel ebracteatis. Calyx 3.5 mm diametro parce pubescens, lobis depresso-deltoides post anthesin erectis. Petala 3.5 mm longa 2 mm lata obovata. Stamina 1.8 mm longa. Folliculus 2.5 mm longus subglaber.

Nuristan: Between Voma and Trokikorl (July 31, 1955 S. K.).—Typus in Herb. Univ. Kyoto, between Siyagird and Charikar (July 11, 1955 S. K.).

This variety is distinct by the glabrous leaves. The plant collected between Siyagird and Charikar has larger leaves (to 18 mm long) and longer peduncle (6–9 mm lg.).

In Nuristan, between Trokikorl and Chatrass, the writer collected a plant intermediate between this variety and the following var.

var. **hindukushiensis** Kitamura var. nov.

A var. Boissieri inflorescentiis 12–19 floriferis (nec 5–10 fl.), pedicellis longioribus 10–15 mm longis (nec 5 mm longis).

Suffrutex circ 1 m longus ascendens vel dependens laxe ramosus, ramis flexuosis gracilibus 1–4 mm diametro, hornotinis rubrobrunnescentibus pubescentibus. Folia rami sterilis, petiolo 3–5 mm longo, lamina ovato-rotundata 20–22 mm longa et lata apice rotundata basi truncata vel leviter cuneata utriusque praecipue subtus dense

pubescens margine 5-lobata, lobis obtuse mucronulato-dentata, textura chartacea. Folia rami floriferi 1.5–4 cm longi, obovato-oblonga 9–13 mm longa 4–9 mm lata apice obtusa dentata basi cuneato-rotundata utrinque dense pubescentia, petiolis 0.5–2 mm longis. Inflorescentia racemoso-umbellata circ. 3 cm diametro, pedicellis 10–15 mm longis gracilibus dense pubescentibus, bracteis unis 1–1.5 mm longis praeditis. Calyx 4–4.5 mm diametro dense pubescens, lobis post anthesin erectis depresso-deltaideis. Petala cuneiformia 4.5–5 mm longa apice 3.5–4 mm lata. Antherae 0.5 mm longae, filamenta 2 mm longa. Folliculus 3 mm longus dense pubescens.

Nuristan: Between Trokikorl and Chatrass (Aug. 1, 1955 S. K.)—Typus in Herb. Univ. Kyoto.

The leaves of the sterile branches are almost round and of the fertile branches are obovate and smaller.

Leguminosae

Acasia eburnea (L.) Willd., Sp. Pl. IV: 1081 (1805).—Boiss., F. O. II: 637.—Baker in F. B. I. II: 293.

Distr. India, Pakistan, Afghanistan, Arabia, Himalayas.

Acasia Farnesiana (L.) Willd., Sp. Pl. IV: 1083 (1805).—Bornm. in Engler, Bot. Jahrb. LXVI: 228 (1934).

Distr. Pantropic, Afghanistan (cultivated in Jalalabad).

Acasia modesta Wall., Pl. Rar. Asiat. t. 130 (1831).—Jacqu., Voy. Bot. t. 56 (1844).—Boiss., F. O. II: 638.

Jalalabad (June 16, 1955 S. K.).

Distr. Himalaya, Pakistan.

Albizzia Julibrissin Durazz. in Mag. Tosc. III, IV: 11 (1772).—Palibin in Fl. URSS XI: 10 (1945).

Kunduz cultivated in Experimental farm (July 8, 1955 S. K.).

Distr. North Africa, warm or tropical regions of Eurasia.

Alhagi persarum Boiss. et Buhse in n. Mém. Soc. Nat. Mosc. XII: 77 (1860).—Shaparenko in Fl. URSS XIII: 370, Tab. XXIX, fig. 4 (1948).—Rechinger f., Symb. Afgh. III: 198 (1957).

A. camerorum sensu Boiss., F. O. II: 559 p. p.

Distr. Caucasus, Central Asia, Aralo-Casp., Kara-Kum., Gorn.-Turkm., Iran, Arm.-Kurd., Afghanistan.

Alhagi pseudalhagi (M. B.) Desv. in Journ. Bot. 120 (1813).—Shap. in Fl. URSS XIII: 368, Tab. XIX, fig. 3.—Rechinger f., Symb. Afgh. III: 198.

A. camerorum sensu Boiss., F. O. II: 559 p. p.

Distr. E. Europe, W. Siberia, Central Asia: Aralo-Kasp., Kara-Kum., Asia Minor, Iran: Tabriz (July 28, 1955 K. Yamashita).

Alhagi sparsifolia Shap. in Fl. URSS XIII: 370, Tab. XIX, fig. 5.—Rechinger f., Symb. Afgh. III: 198.

15 km east of Kandahar (June 6, 1955 S. K.), Eastern Prov.: Gambeli desert (July 26, 1955 S. K.)—fr., Kabul, Tomb of Baber (July 14, 1955 S. K.), Kunduz (July 8, 1955 S. K.).

Distr. Central Asia: Tianshan, Pam.—Al., Syr—Dar., Kyz.—Kum., Aralo—Casp., Dzung.—Kashg., Mong., Afghanistan: Pakistan, Guilistan (May 28, 1955 S. K.), Quetta (May 31, 1955 S. K.).

The branches are divaricate. The lobes of calyx are acutiuscule. This may be treated as *Alph. pseudalhagi* subsp. *sparsifolia*.

Ammothamnus Lehmanni Bunge, Enum. Pl. Lehm. 243, t. 12 (1849).—Aitch. in T. L. S. n. III: 60.—Rechinger f., Symb. Afgh. III: 9.—Vassilczenko in Fl. URSS XI: 29 (1945).

Distr. Afghanistan: Kyz.—Kum., Kara—Kum., Aralo—Kasp.

Argyrobium roseum (Camb.) Jaub. et Spach in Ann. Sc. Nat. sér. II, XIX: 51 (1843), Illustr. Pl. Or. I: 116 (1843).—Boiss., F. O. II: 34.—Baker, F. B. I. II: 64.—Aitch., J. L. S. XIX: 157.—Rechinger f., S. A. III: 9.

Cytisus roseus Camb. in Jacquem., Voy. Bot. 35, t. 40 (1844).

Distr. Iran, Afghanistan, Pakistan, Himalayas.

Argyrobium stenophyllum Boiss., F. O. II: 32 (1872).

Distr. Afghanistan.

***Astragalus*.**

The genus is too large for the alphabetical enumeration of specific names. The subgenera are arranged in alphabetical order.

Subgen. ***Calycocystis*** Bunge.

Astragalus (Chaetodon) ***albosetulosus*** Širj. et Rech. f. in Symb. Afgh. III: 176, Fig. 208, 209.

Distr. Afghanistan (C).

Subgen. ***Calycophysa*.**

Astragalus (Alopecias) ***Alopecias*** Pallas, Astrag. 12, t. 9 (1800).—Boiss., F. O. II: 411.—Gonch., Fl. URSS XII: 387, Tab. XXVI-1 (1946).—Rech. f., S. A. III: 127.

Between Pulikhumri and Haibak (June 27, 1955 S. K.).

Distr. W. Siberia, Central Asia (common), Iran, Afghanistan.

Astragalus (Alopecias) ***anthosphaerus*** Rech. f. et Gilli, Symb. Afgh. III: 127, Fig. 146, 147.

Distr. Afghanistan (C).

Astragalus (Alopecias) ***bezudensis*** Širj. et Rech. f., l. c., Fig. 148, 149.

Distr. Afghanistan (C).

Astragalus (Alopecias) ***faizabadensis*** Širj. et Rech. f., l. c. Fig. 150, 151.

Distr. Afghanistan (NE).

Astragalus (Alopecias) ***Grisebachianus*** Aitch. et Baker, T. L. S. n. III: 52.

Distr. Afghanistan (W).

Astragalus (Campylanthus) **congestus** Baker, J. L. S. XIX: 158 (1882).

Distr. Afghanistan (Kuram).

Astragalus (Campylanthus) **ptilocephalus** Baker, J. L. S. XVIII: 47 (1860).

Distr. Afghanistan (Kuram).

Astragalus (Eremophysa) **kahiricus** DC., Prodr. II: 292 (1825).—Boiss., F. O. II: 420.—Aitch., T. L. S. n. III: 52.—Rech. f., Symb. Afgh. III: 133.

Distr. North Africa, Arabia, Iran, Afghanistan, Pakistan.

Astragalus (Megalocystis) **keratensis** Bunge, Astrag. I: 73 (1868), II: 122 (1869).—Boiss., F. O. II: 400.

Distr. Iran, Afghanistan.

Astragalus (Megalocystis) **Lumsdenianus** Aitch. et Baker, T. L. S. n. III: 124 (1888).—Rech. f., Symb. Afgh. III: 124.

Distr. Afghanistan (W).

Astragalus (Megalocystis) **Merkianus** Aitch. et Baker, T. L. S. n. III: 125 (1888).

Distr. Afghanistan (W).

Astragalus (Megalocystis) **noziensis** Širj. et Rech. f., Symb. Afgh. III: 124, Fig. 144, 145 (1957).

Shishigar (June 11, 1955 S. K.).

Distr. Afghanistan.

Astragalus (Megalocystis) **pachyrhachis** Širj. et Rechinger f., S. A. III: 125 (1957).

Distr. Afghanistan (C).

Astragalus (Poterium) **anisacanthus** Boiss., Diag. Ser. I, IX: 129 (1849), F. O. II: 395.—Aitch., T. L. S. n. III: 53.

Distr. Afghanistan, Pakistan.

Astragalus (Poterium) **afghano-persicus** Kitamura in Acta Phytotax. Geobot. XVII: 137 (1958).

Astragalus (Poterium) **cornutus** Bunge, Astrag. I: 76 (1868), II: 130 (1869) non Pallas (1771).

Distr. Iran (E), Afghanistan (W).

Astragalus (Poterium) **jubatus** Boiss., Diag. Ser. I, IX: 104 (1849), F. O. II: 394.—Rechinger f., Sym. Afgh. III: 122.

Distr. Iran, Afghanistan.

Astragalus (Poterium) **Schurabicus** Bunge, Astr. I: 76 (1868), II: 129 (1869).—Boiss., F. O. II: 395.—Rechinger f., Symb. Afgh. III: 124.

Near Kalat (June 10, 1955 S. K.).

Distr. Iran, Afghanistan.

Subgen. **Cercidothrix**.

Astragalus (*Acantherioceras*) **Acantherioceras** Rech. f. et Köie, Symb. Afgh. III: 147, Fig. 172, 173 (1957).

Distr. Afghanistan (SW).

Astragalus (*Acantherioceras*) **lugubris** Rech. f. et Köie, Symb. Afgh. III: 149, Fig. 174, 175.

Distr. Afghanistan (W).

Astragalus (*Ammodendron*) **Goreanus** Aitch. et Baker, T. L. S. n. III: 55 (1888).

Distr. Afghanistan.

Astragalus (*Ammodendron*) **hyrcanus** Pallas, Astrag. 25, t. 22 (1800).—Boiss., F. O. II: 488.—Aitch., T. L. S. n. III: 55.

Distr. Caucasus, Afghanistan, Pakistan.

Astragalus (*Ammodendron*) **oligophyllus** Boiss., Diag. Ser. I, II: 47 (1843), F. O. II: 488.—Aitch., T. L. S. n. III: 55.—Rechinger f., S. A. III: 171 (1957).

Distr. Iran, Afghanistan.

var. **nigrocalycinus** Širj. et Rech. f., l. c. 171.

Distr. Afghanistan (N, W).

Astragalus (*Ammodendron*) **quinquejugus** Širj. et Rech. f., l. c. 171, Fig. 204, 205 (1957).

Distr. Afghanistan (C).

Astragalus (*Ammodendron*) **squarrosus** Bunge, Astrag. I: 129 (1868), II: 226 (1869).—Boiss., F. O. II: 497.—Rech. f., Symb. Afgh. III: 173 (1957).

Distr. Iran, Afghanistan, Pakistan.

Astragalus (*Ammodendron*) **Talbotianus** Aitch. et Baker, T. L. S. n. III: 56 (1888).

var. **condensatus** Aitch. et Baker, l. c.

Distr. Afghanistan (W).

Astragalus (*Ammotrophus*) **Griffithii** Benth. ex Bunge, Astr. II: 192 (1869).—Boiss., F. O. II: 452.

Distr. Afghanistan.

Astragalus (*Caraganella*) **koshukensis** Boiss., F. O. II: 492.

Distr. Afghanistan.

Astragalus (*Caraganella*) **mokurensis** Širj. et Rech. f., Symb. Afgh. III: 175, Fig. 206, 207.

Distr. Afghanistan (SE).

Astragalus (*Caraganella*) **Stocksii** Benth. ex Bunge, Astrag. I: 6 (1868).—Boiss., F. O. II: 492.

Distr. Afghanistan, Pakistan.

Astragalus (*Corethrums*) **chamaesarathron** Rech. f., Symb. Afgh. III: 137, Fig. 159 (1957).

Distr. Afghanistan (NE).

Astragalus (Corethrum) **chorizanthus** Rech. f. et Gilli, Symb. Afgh. III: 138, Fig. 160, 161 (1957).

Distr. Afghanistan (E).

Astragalus (Corethrum) **virgaeformis** Širj. et Rech. f., Symb. Afgh. III: 139, Fig. 162, 163, 164. (1957).

Distr. Afghanistan (C).

Astragalus (Erioceras) **anacamptoides** Širj. et Rech. f., Symb. Afgh. III: 140, Fig. 165, 166 (1957).

Distr. Afghanistan.

Astragalus (Erioceras) **sympileicarpus** Rech. f., l. c. 145, Fig. 169.

Distr. Afghanistan (NW. Aitchison n. 1048).

Astragalus (Erioceras) **xylocladus** Rechinger f. et Gilli, Symb. Afgh. III: 146, Fig. 170, 171 (1957).

Distr. Afghanistan (E).

Astragalus (Iranaea) **saxifractor** Rech. f. et Gilli, Symb. Afgh. III: 133, Fig. 154, 155 (1957).

Distr. Afghanistan (E).

Astragalus (Iranaea) **Weirianus** Aitch. et Baker, T. L. S. n. III: 54.—Rechinger f., Symb. Afgh. III: 135, Fig. 156.

Distr. Afghanistan (NW).

Astragalus (Leucocerus) **crassispinus** Bunge, Astrag. I: 132 (1868), II: 230.—Boiss., F. O. II: 492.

Distr. Afghanistan.

Astragalus (Proselius) **cerasinus** Baker in Journ. Linn. Soc. XVIII: 47 (1880).

A. Mangeri Bornm. in Engler, Bot. Jahrb. LXVI: 225 (1934).—Rechinger f., Symb. Afgh. III: 152, Fig. 180, 181 (1957).

A. dekazygus Širj. et Rechinger f., Symb. Afgh. III: 151, Fig. 176, 177.

Near Kabul (June 11, 1955 S. K.), Shishigar (June 11, 1955 S. K.).

Distr. Afghanistan, Pakistan.

Astragalus (Proselius) **Holdichianus** Aitch. et Baker, T. L. S. n. III: 54.—Rechinger f., Symb. Afgh. III: 152, Fig. 178.

var. **giganteus** Kitamura var. nov. **Fig. 58.**

Planta robustior. Racemi 17–24 cm longi, floribus ad 22. Folia 14–20 cm longa, foliolis 17–25.

Distr. Afghanistan.

Our plants are more robust. Leaves 14–20 cm long, leaflets more numerous 17–25. Scape 24 cm long. Flowers to 22. This may be a distinct species closely related to *A. Holdichianus*.

Astragalus (Proselius) **panjaoënsis** Širj. et Rech. f., Symb. Afgh. III: 154, Fig. 182 (1957).

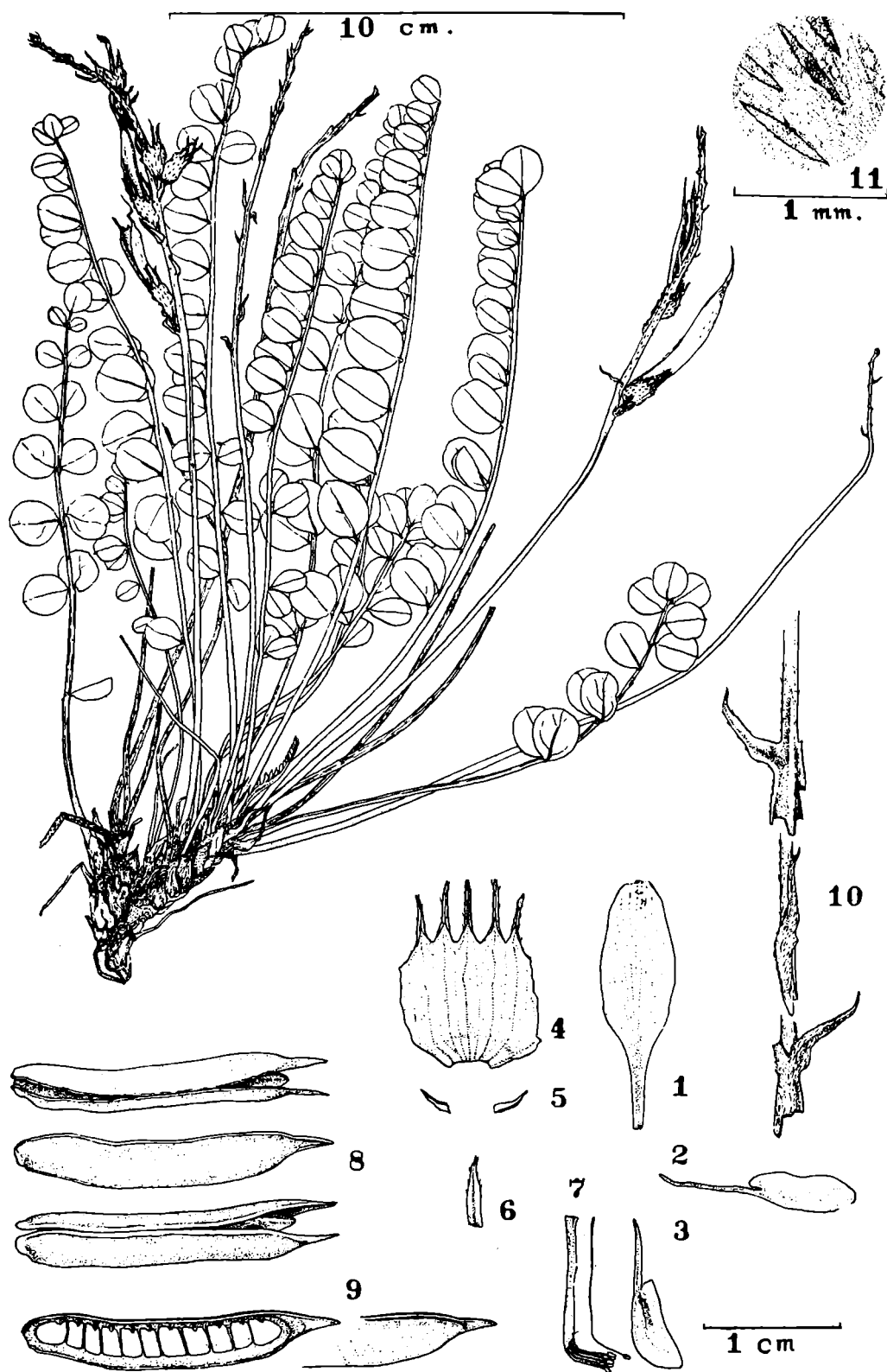


Fig. 58. *Astragalus Holdichianus* var. *giganteus* Kitam.: 1 Standard, 2 Wing, 3 Keel, 4 Calyx, 5 Bracteoles, 6 Bract, 7 Stamens, 8 Legume, 9 Vertical section of Legume, 10 Stipules, 11 Hairs on the underside of Leaf. (Pagman near Kabul).

Distr. Afghanistan (C).

Astragalus (Proselius) **superfluus** Rechinger f. et Köie, Symb. Afgh. III: 156, Fig. 183, 184 (1957).

Distr. Afghanistan (W).

Astragalus (Trachyceris) **mikrophyton** Širj. et Rech. f., Symb. Afgh. III: 135, Fig. 158.

Distr. Afghanistan (C).

Astragalus (Xiphidium) **afghanomontanus** Širj. et Rech. f., Symb. Afgh. III: 157, Fig. 185, 186 (1957).

Distr. Afghanistan (C, Nuristan).

Astragalus (Xiphidium) **bifoliolatus** Širj. et Rech. f., Symb. Afgh. III: 159, Fig. 187, 188.

Distr. Afghanistan (C).

Astragalus (Xiphidium) **bijugus** Širj. et Rech. f., Symb. Afgh. III: 160, Fig. 189, 190 (1957).

Distr. Afghanistan (C).

Astragalus (Xiphidium) **kandaharensis** Širj. et Rech. f., Symb. Afgh. III: 161, Fig. 191, 192 (1957).

Distr. Afghanistan (SE).

Astragalus (Xiphidium) **microcalycinus** Širj. et Rech. f., Symb. Afgh. III: 163, Fig. 194, 195 (1957).

Distr. Afghanistan (E).

Astragalus (Xiphidium) **nigrolineatus** Širj. et Rech. f., Symb. Afgh. III: 165, Fig. 196, 197 (1957).

Distr. Afghanistan (NW, SW).

Astragalus (Xiphidium) **patulepilosus** Širj. et Rech. f., Symb. Afgh. III: 166, Fig. 198, 199 (1957).

Distr. Afghanistan (SW).

Astragalus (Xiphidium) **puligumuriensis** Rechinger f., Symb. Afgh. III: 167 (1957).

Distr. Afghanistan (E).

Astragalus (Xiphidium) **subulatus** Bieber., Fl. Taur. Cauc. II: 193 (1808).—Aitch., T. L. S. n. III: 55.—Grossh. in Fl. URSS XII: 699 (1946).

Distr. E. Europe, Caucasus, W. Siberia, Afghanistan (sec Aitch., n. 201).

Astragalus (Xiphidium) **suffalcatus** Bunge, Astrag. I: 125 (1868), II: 219 (1869).—Boiss., F. O. II: 483.—Rechinger f., Symb. Afgh. III: 168 (1957).

Astragalus macrosyrinx Rechinger f., Symb. Afgh. III: 162, Fig. 193.

Shishigar (June 11, 1955 S. K.), Shibar Pass (June 24, 1955 S. K.), between Pulikhumri and Haibak (June 27, 1955 S. K.).

Distr. Afghanistan.

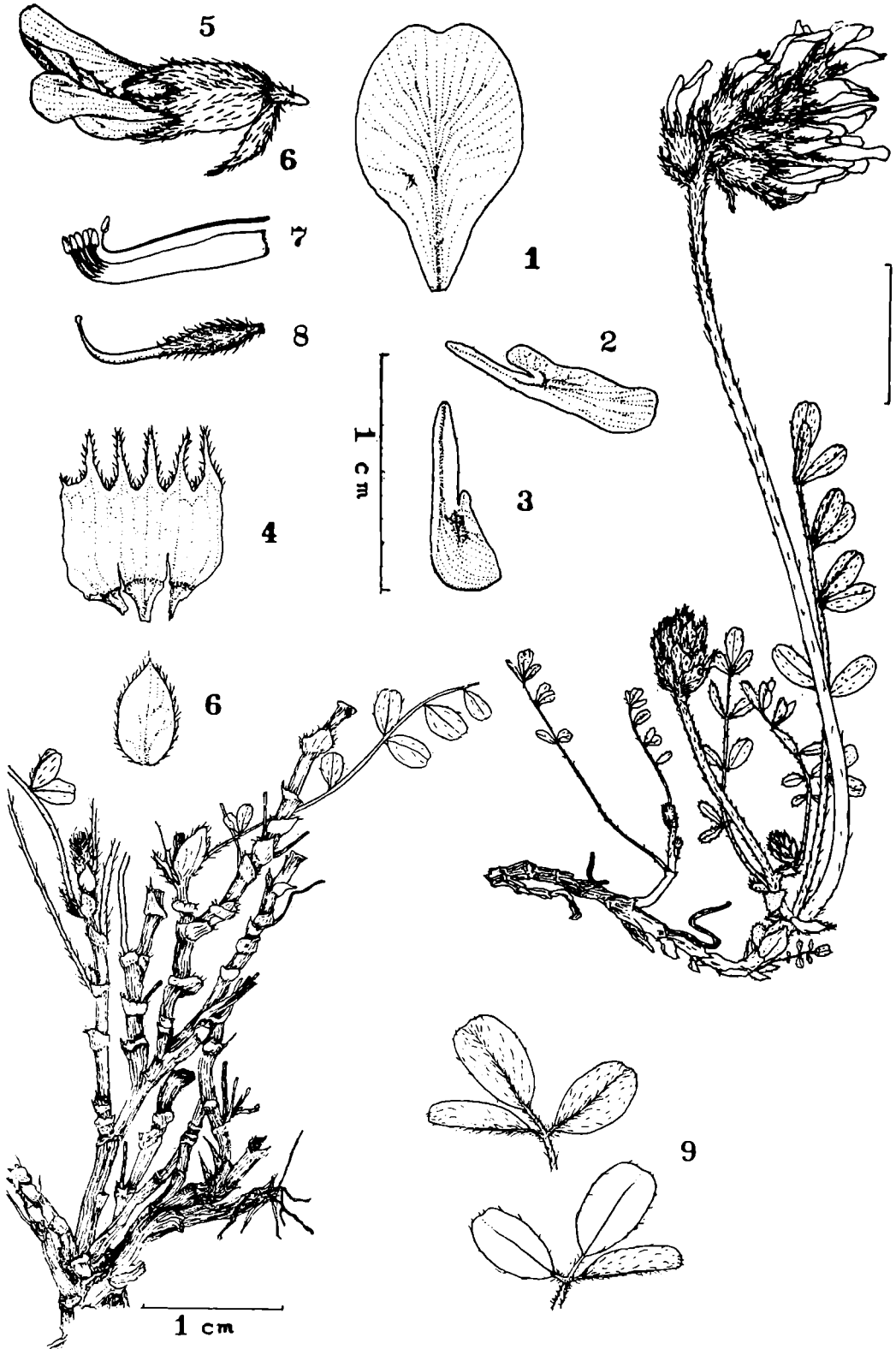


Fig. 59. *Astragalus supraglaber* Kitam.: 1 Standard, 2 Wing, 3 Keel, 4 Calyx, 5 Flower, 6 Bract, 7 Stamens, 8 Pistil, 9 Upper part of Leaf. (Nuristan: Shabul Gul).

Astragalus (Xiphidium) **vespilus** Rech. f. et Köie, Symb. Afgh. III: 168, Fig. 200, 201 (1957).

Distr. Afghanistan (SW).

Astragalus (Xiphidium) **xanthoxiphidiopsis** Rech. f., Symb. Afgh. III: 169, Fig. 202, 203 (1957).

Distr. Afghanistan (E).

Subgen. **Hypoglottis**.

Astragalus (Heterozyx) **neovorticellatus** Kitamura in Acta Phytotax. Geobot. XVII: 137 (1958).

Astragalus verticillaris Bunge non L. nec Scop., Astrag. I, 53 (1868), II: 88 (1889).—Boiss., F. O. II: 264.—Aitch., J. L. S. XVIII: 45.

Distr. Afghanistan (E).

This should be compared with *A. (Myobroma) Neubaueria* Širj. et Rech. f. (1957).

Astragalus (Hypoglottis) **supraglaber** Kitamura in Acta Phytotax. Geobot. XVI: 138 (1956), XVII: 137 (1958). **Fig. 59.**

Astragalus macrostegius Rech. f., Symb. Afgh. III: 37, Fig. 29, 30 (1957).

Herbae perennes pumilae. Subacaulis, caule abbreviato repente 3–5 cm longo, 1 mm diametro, pilis albis minutis adpressis vestito. Folia imparipinnata 4.5–6 cm longa, foliola 11–15, oblonga 6–8 mm longa 3–4 mm lata apice truncata mucronulata, petiolulis 1 mm longis, supra glabra subtus pilis albis adpressis hirsuta, stipulis late ovatis 2–3.5 mm longis a petiolo et inter se liberis. Scapus 3.5–8.5 cm longus, 1 mm diametro inferne pilis albis superne pilis nigris adpressis pilosus. Flores congesti subsessiles 6–13, bracteis 3–3.5 mm longis lanceolatis nigropilosis. Calyx campanulatus, tubo 3–3.5 mm longo dense nigropiloso, pedicello 0.5 mm longo ebracteato, lobis circ. 2 mm longis. Corolla 9–10 mm longa caerulea. Vexillum 10 mm longum 4.3 mm latum emarginatum. Alae 7.5 mm longae, auriculis 1.2 mm longis. Carina 7 mm longa. Ovarium 2 ovulatum sessile dense pilosum. Stylus glaber apice minute capitatus.

Nuristan, Shabul Gul, in herbis alpinis 3900 m (Aug. 6, 1955 S. Kitamura).—Typus in Herb. Univ. Kyoto.

Distr. Afghanistan, Pakistan.

This is a small weak alpine herb. The leaves are glabrous above and white pilose beneath. The scape bears subsessile florets.

Astragalus (Hypoglottis) **tibetanus** Benth. ex Bunge, Astrag. I: 52 (1868), II: 85 (1869).—Boiss., F. O. II: 250.—Baker, F. B. I. II: 124.—Rechinger f., Symb. Afgh. III: 39 (1957).—Gross. in Fl. URSS XII: 258. (1946).

Distr. Afghanistan, Tibet, W. Siberia, Central Asia: Dz.—Tarb., Pam.—Al., Tianshan.

Astragalus (Malacothrix) **Pseudo-Beckii** Šerj. et Rech. f., Symb. Afgh. III: 40, Fig. 33, 34.

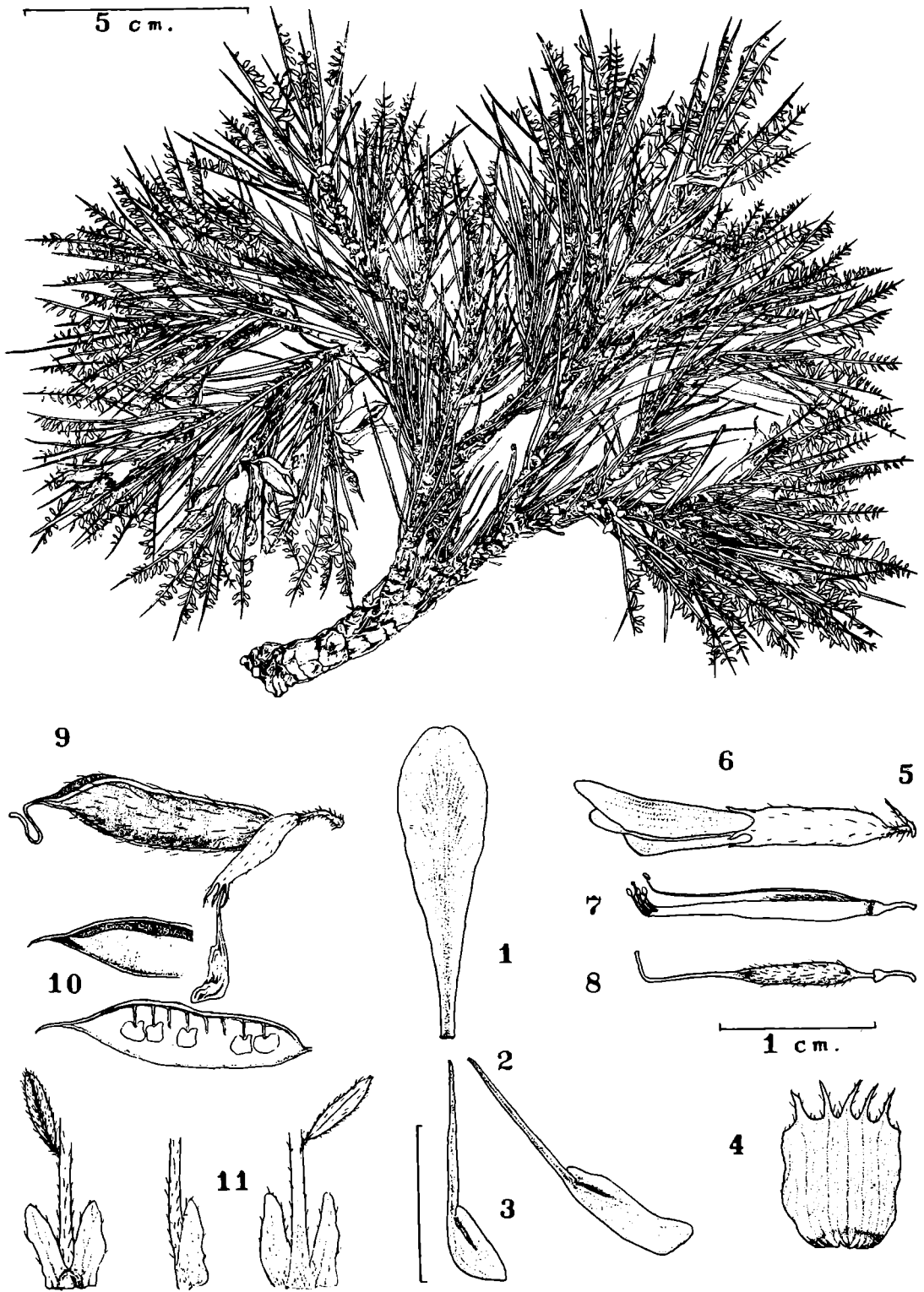


Fig. 60. *Astragalus confertissimus* Kitam.: 1 Standard, 2 Wing, 3 Keel, 4 Calyx, 5 Bract, 6 Flower, 7 Stamens, 8 Pistill, 9 Legume, 10 Vertical section of Legume, 11 Stipules. (Nuristan: Shabul Gul).

Distr. Afghanistan (E, C, NW).

Astragalus (Malacothrix) **Rawlinsianus** Aitch. et Baker, T. L. S. n. III: 51.
—Rechinger f., Symb. Afgh. III: 42 (1957).

Distr. Afghanistan (W).

Astragalus (Poliothrix) **leucocephalus** Grah. ex Bunge, Astrag. I: 48 (1868).
—Boiss., F. O. II: 241.—Baker, F. B. I. II: 128.—Rechinger f., Symb. Afgh. III: 37, Fig. 28 (1957).

Distr. Afghanistan, Pakistan, Himalaya: from Kashmir to Kumaon.

Astragalus (Stereothrix) **sikaramensis** Širj. et Rech. f., Symb. Afgh. III: 39, Fig. 31, 32.

A. leucocephalus Aitch. (non Grah.), J. L. S. XVIII: 45.

Distr. Afghanistan (Kuram).

Subgen. **Phaca**.

Astragalus (Acanthochristianopsis) **Acanthochristianopsis** Rech. f. et Köie, Symb. Afgh. III: 63, Fig. 64, 65 (1957).

Distr. Afghanistan (W).

Astragalus (Acanthophaea) **Ajfreidii** Aitch. et Baker, J. L. S. XIX: 157 (1882).
—Rechinger f., Symb. Afgh. III: 111, Fig. 128, 129 (1957).

Distr. Afghanistan (E).

Astragalus (Acanthophaea) **Chaworth-Mustersi** Širj. et Rech. f., Symb. Afgh. III: 113 Fig. 130 (1957).

Distr. Afghanistan (Pagman).

Astragalus (Acanthophaea) **confertissimus** Kitamura in Acta Phytotax. Geobot. XVI: 139 (1956), XVII: 137 (1958). **Fig. 60.**

Astragalus myriocladus Širj. et Rech. f., Symb. Afgh. III: 98, Fig. 111, 112 (1957).

Astragalus psilacanthus sensu Rechinger f., Symb. Afgh. III: 102 non Boiss. p. p.

Suffrutex 17 cm altus, valde ramosus, ramis inferne lignescentibus demum 1 cm diametro, superne densissime foliatis internodiis circ. 2 mm longis. Folia 3.3–4.3 mm longa apice spinosa persistentia, foliola 12–14, irregulariter disposita, inferiora obovato-oblonga 4.5 mm longa apice mucronulata basi cuneata, sursum depauperata, suprema vix 1 mm longa, utrinque pilis albis basifixis hirsuta, stipulis ovatis apice acutis 4 mm longis albo-membranaceis basi petiolo adnatis, inter se liberis. Flores purpurei axillares solitarii, pedicellis 2–2.5 mm longis, bracteis 1–2 lanceolatis 3 mm longis praeditis. Calyx tubulosus pilis albis et nigris sparse hirsutus, tubo 9 mm longo 3 mm lato, lobis linearibus 2.5 mm longis. Vexillum 21 mm longum 7 mm latum glabrum apice emarginatum. Alae 21 mm longae. Carina 18 mm longa longe unguiculata. Legumen sessile biloculare pilis albis hirsutum, oblongum apice acuminatum, corpore 14–18 mm longum 5 mm latum, ventre carinatum dorso leviter sulcatum.

Nuristan, Shabul Gul, in regione rupestri, 3500 m (Aug. 6, 1955 S. Kitamura).—

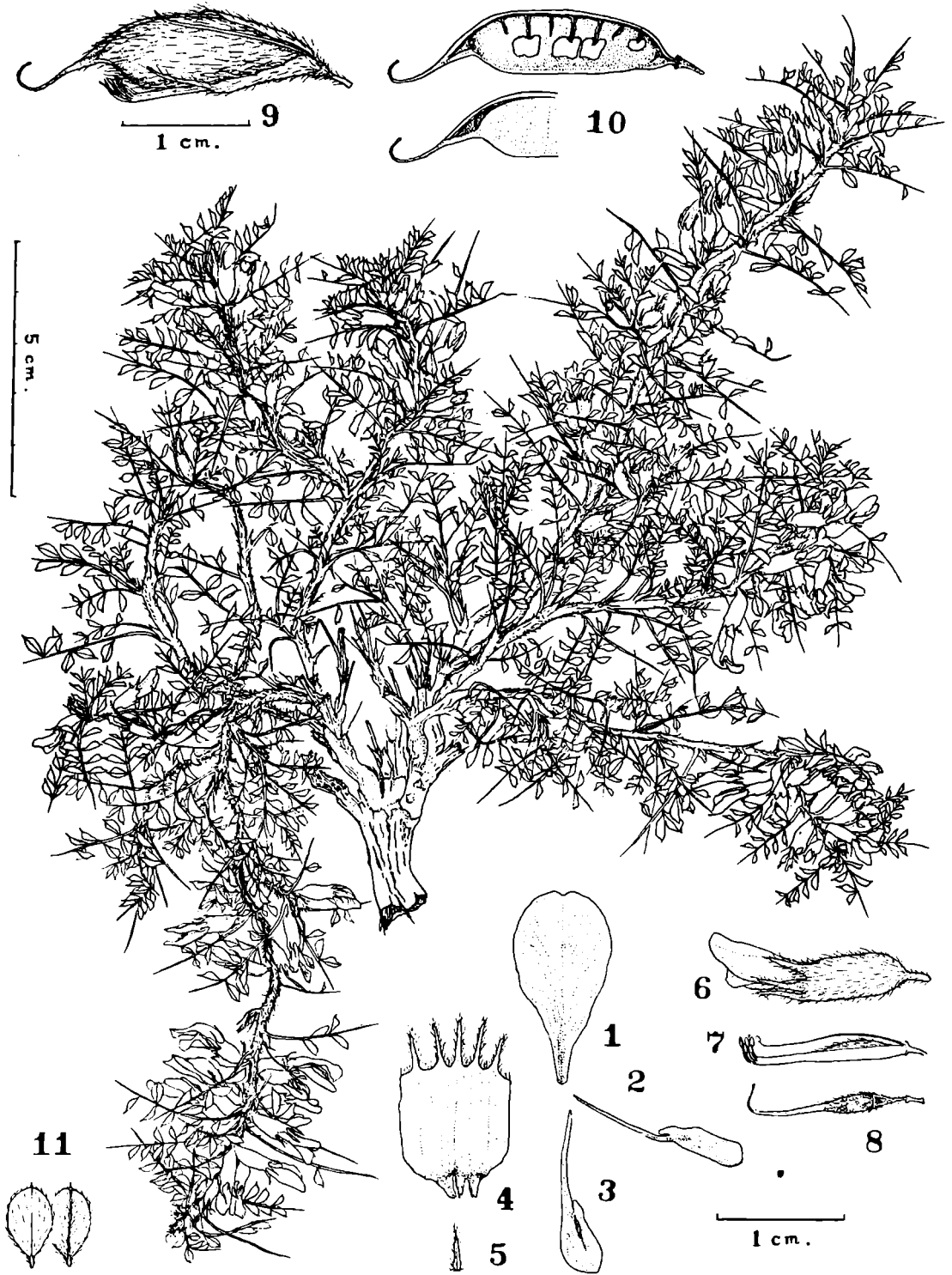


Fig. 61. *Astragalus terrestris* Kitam.: 1 Standard, 2 Wing, 3 Keel, 4 Calyx, 5 Bract, 6 Flower, 7 Stamens, 8 Pistil, 9 Legume, 10 Vertical section of Legume, 11 Leaflets. (Nuristan: Between Kushimaicot and Pushuki).

Typus in Herb. Univ. Kyoto.

Distr. Afghanistan (E).

According to the description of *A. myriocladus*, the calyx is 17 mm long, but the calices of our specimens are 11.5 mm long. The corolla of *A. myriocladus* is according to the description, twice as long as the calyx, and the vexillum 23 mm long, then the calyx may be 11.5 mm long. The figures of *A. myriocladus* coincide well with *A. confertissimus*.

This differs from *A. psilacanthus* (according to the original description of Boissier) by the shorter leaves and shorter peduncles.

Astragalus (Acanthophace) **Diopogon** Bunge, Astrag. I: 70 (1868), II: 117 (1869).—Boiss., F. O. II: 313.

Distr. Afghanistan, Pakistan.

Astragalus (Acanthophace) **Hemsleyi** Aitch. et Baker, J. L. S. XIX: 158 (1882).—Rechinger f., Symb. Afgh. III: 114, Fig. 131, 132. (1957).

Astragalus canispinus Boiss. F. O. Suppl. 181 (1888).

Distr. Afghanistan (Kuram).

Astragalus (Acanthophace) **neostipitatus** Kitamura in Acta Phytotax. Geobot. XVII: 137 (1958).

Astragalus stipitatus Boiss., F. O. II: 305 (1872) non Sims. 1823.

Distr. Afghanistan (Regno Cabulici).

Astragalus (Acanthophace) **spinellifer** Rech. f. et Gilli, Symb. Afgh. III: 104, Fig. 121, 122 (1957) sub *Aegacantha*.

Nuristan: Shabul Gul (Aug. 6, 1955 S. K.).

Distr. Afghanistan (E).

The corolla is purple.

Astragalus (Acanthophace) **terrestris** Kitamura in Acta Phytotax. Geobot. XVI: 139 (1956). Fig. 61.

Suffrutex basi dense ramosus, lignescens, ramis hornotinis procumbentibus gracilibus saepe atropurpurascens 1–2 mm diametro, pilis albis basifixis dense hirsutis. Folia paripinnata spinosa 20–40 mm longa, foliola 5–7 juga obovato-oblonga, inferiora 5–50 mm longa sursum depauperata, apice rotundata mucronulato-spinulosa basi cuneata utrinque pilis albis dense sericea, stipulis lanceolato-linearibus 5–6 mm longis membranaceis basi petiolo adnatis, inter se liberis, internodiis laxis 7–17 mm longis. Racemi copiosi axillares, abbreviati 1–3 flori, 3–15 mm longi, bracteis lanceolatis 2.5–4 mm longis membranaceis, pedicellis 1.5–2 mm longis, bracteolis linearibus 1.2 mm longis. Calyx tubulosus, pilis mere albis dense hirsutus, tubo 8 mm longo 3–4 mm lato, lobis linearibus 5 mm longis. Flores purpurei, vexillum 15 mm longum apice emarginatum basi longe unguiculatum dorso plerumque glabrum rarius sparse pilosum, alae 14 mm longae glabrae longe unguiculatae, carina 13 mm longa glabra. Stylus glaber. Ovarium sessile dense albo-hirtum. Legumen oblongum biloculare apice

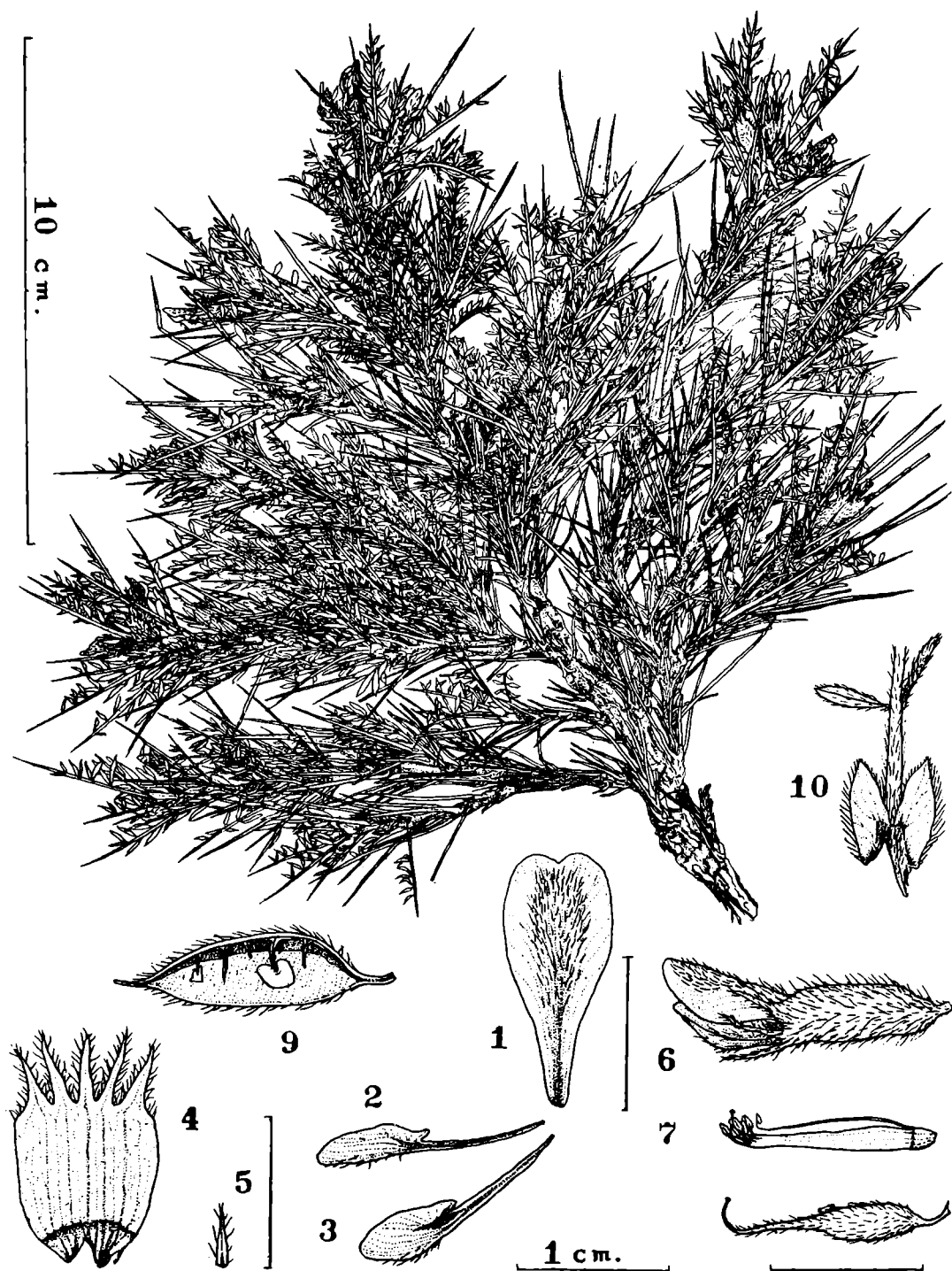


Fig. 62. *Astragalus lasioseminus* Boiss. var. *gracilior* Kitam.: 1 Stand, 2 Wing, 3 Keel, 4 Calyx, 5 Bracteole, 6 Flower, 7 Stamens, 8 Pistil, 9 Vertical section of Legume, 10 Stipules. (Nuristan: Shabul Gul).

acuminatum 12–16 mm longum (sine acumine) 5 mm latum dense albo-hirtum ventre carinatum dorso leviter sulcatum.

Nuristan: Between Kushimaicot and Pushuki 2200 m (Aug. 3, 1955 S. K.)—Typus in Herb. Univ. Kyoto, between Pushuki and Kushitaki 2400 m (Aug. 4, 1955 S. K.), between Chatrass and Budigrah, 2100 m (Aug. 2, 1955 S. K.), Chatrass, 2090 m (Aug. 2, 1955 S. K.)

var. **hirsutum** Kitamura, l. c.

Vexillum sparse hirsutum.

Nuristan: Eschtaway 2540 m (Aug. 7, 1955 S. K.).

Distr. Afghanistan.

This differs from *A. Hemsleyi* by the larger flowers and fruits. The leaves are larger and always densely hirsute. This differs also from *A. psilacanthus*, by the leaflets spinulose at the apex, and by the longer internode.

Sect. *Aegacantha* with spinescent leaves and yellow flowers, is principally developed in Afghanistan, and also found in Pakistan, Iran, Pam.-Al. and Tianshan.

Astragalus (*Aegacantha*) **babensis** Širj. et Rechinger f., Symb. Afgh. III: 84, Fig. 91, 92 (1957).

Distr. Afghanistan (C).

Astragalus (*Aegacantha*) **cuneifolius** Bunge, Astrag. I: 44 (1868), II: 68 (1869).—Boiss., F. O. II: 308.

Distr. Afghanistan (Reg. Cabul.).

Astragalus (*Aegacantha*) **discernendus** Širj. et Rech. f., Symb. Afgh. III: 85, Fig. 93, 94 (1957).

Astr. psilacanthus Aitch. (non Boiss.), J. L. S. XVIII: 45 (1880).

Distr. Afghanistan (Kuram).

Astragalus (*Aegacantha*) **distinctissimus** Rech. f. et Edelb., Symb. Afgh. III: 86, Fig. 95, 96 (1957).

Distr. Afghanistan (NW).

Astragalus (*Aegacantha*) **eustrophacanthus** Rech. f. et Edelberg, Symb. Afgh. III: 87, Fig. 97, 98 (1957).

Distr. Afghanistan (C).

Astragalus (*Aegacantha*) **flexirachis** Rech. f. et Edelberg, Symb. Afgh. III: 89, Fig. 98 (1957).

Distr. Afghanistan (C).

Astragalus (*Aegacantha*) **genistoides** Boiss., Diag. Ser. I, IX: 97 (1849), F. O. II: 304.—Rechinger f., Symb. Afgh. III: 90, Fig. 99, 1000 (1957).

A. leptus Boiss. var. *bamianicus* Širj. et Rech. f. in Ann. Naturhist. Mus. Wien. 58: 62 (1951).

A. psilopterus Bunge, Astrag. I: 45 (1868), II: 71 (1869).

Kabul, Tomb of Baber (July 14, 1955 S. K.), Pagman near Kabul (May 20, 1955

K. Yamashita).

Distr. Afghanistan.

Astragalus (Aegacantha) **Grahamianus** Royle, Ill. Bot. Himal. Mount. 199, t. 36, fig. 2 (1835).—Rechinger f., Symb. Afgh. III: 92, Fig. 101, 102 (1957).

Astragalus polyacanthus Royle (non Wall.), l. c. 199.—Baker, F. B. I. II: 134.—Aitch., J. L. S. XVIII: 45. *A. psilocentros* Fischer. *A. Jacquemontii* Bunge.

Nuristan: Between Voma and Trokikorl (July 31, 1955 S. K.).

Distr. Afghanistan (E), Pakistan, Himalaya: Eastwards to Kumaon and Garwal.

The plant from Nuristan is more robust. The leaf-rachises are longer, attaining 68 mm long. Leaflets 17, apiculate.

Astragalus (Aegacantha) **hadroacanthus** Rech. f. et Gilli, Symb. Afgh. III: 92, Fig. 103.

Distr. Afghanistan (E).

Astragalus (Aegacantha) **infestus** Boiss., Diag. Ser. I, IX: 95 (1849), F. O. II: 305.—Aitch., J. L. S. XVIII: 45.—Rech. f., Symb. Afgh. III: 93, Fig. 106, 107, 108 (1957).

Shishigar (June 11, 1955 S. K.).

Distr. Afghanistan (E).

The leaflets are larger than those of the description, 4–8 mm long.

Astragalus (Aegacantha) **lasioseminus** Boiss., Diag. Ser. I, IX: 96 (1849), F. O. II: 304.—Gontscharov, Fl. URSS XII: 240 (1946).—Rech. f., Symb. Afgh. III: 96.

Shibar Pass (June 24, 1955 S. K.).

Distr. Afghanistan, Tianshan, Pam.-Al.

var. **gracilior** Kitam. var. nov. **Fig. 62.**

Abs typo spinis tenuioribus congestis, foliolis 4–5 jugis 3–5 mm longis, floribus 16 mm longis, tubo calycis pilis nigris et albis hirsutis distinguendus.

Nuristan: Shabul Gul (Aug. 6, 1955 S. K.).—Typus in Herb. Univ. Kyoto.

Distr. Afghanistan.

Astragalus (Aegacantha) **leioseminus** (Lipsky) Popov in Sched. ad Herb. Fl. As. Med. fasc. 16: 50 (1928), Fl. URSS XII: 239 (1946).—Rechinger f., Symb. Afgh. III: 96 (1957).

Distr. Afghanistan, Pam.-Al.

Astragalus (Aegacantha) **leptocentrus** Bunge, Astrag. I: 44 (1868), II: 69 (1869).—Boiss., F. O. II: 307.

Distr. Afghanistan (Reg. Cabulicus).

Astragalus (Aegacantha) **leptus** Boiss., F. O. II: 305 (1872).—Rech. f., S. A.: III: 96 (1957).

Distr. Afghanistan, Pakistan.

Astragalus (Aegacantha) **molestus** Rech. f., Symb. Afgh. III: 96, Fig. 109, 110 (1957).

A. infestus Boiss. var. *glabrostipulatus* Širj. et Rech. f. in Ann. Natur. Mus. Wien, LV: 62 (1951).

Pagman near Kabul (May 20, 1955 K. Yamashita).

Distr. Afghanistan (E).

Astragalus (Aegacantha) **paghmanensis** Širj. et Rech. f., Symb. Afgh. 100, Fig. 113, 114 (1957).

Distr. Afghanistan (E).

Astragalus (Aegacantha) **psilacanthus** Boiss., Diag. Ser. I, IX: 97 (1849), F. O. II: 307.—Rechinger f., Symb. Afgh. III: 102, excl. descrip. et pl. nuristanicae, Fig. 117, 119 (1957).

A. decemjugus Bunge Astr. I: 43 (1868).—Aitch., J. L. S. XVIII: 44 (1868).

Distr. Afghanistan.

According to the description of *A. psilacanthus*, the leaves are 2–3 inches and the peduncles are 1–1.5 inches. Flowers 12–14 lines. The description of Rechinger is very near to that of *A. confertissimus*, except the yellow corolla and the glabrous legume.

Astragalus (Aegacantha) **raphiodontus** Boiss., Diag. Ser. I, IX: 96 (1949), F. O. II: 306.—Aitch., J. L. S. XVIII: 45.—Rechinger f., Symb. Afgh. III: 104, Fig. 120 (1957).

Distr. Afghanistan.

Astragalus (Aegacantha) **stenopterus** Širj. et Rech. f., Symb. Afgh. III: 106, Fig. 123, 124. (1957).

Distr. Afghanistan (C).

Astragalus (Aegacantha) **strigosostipulatus** Rech. f. et Köie, Symb. Afgh. III: 107, Fig. 125, 126 (1957).

Distr. Afghanistan (NE).

Astragalus (Aegacantha) **vexans** Rech. f. et Köie, Symb. Afgh. III: 110, Fig. 127.

Distr. Afghanistan (SW).

Astragalus (Brachycarpus) **jagnobicus** Lipsky var. **shitvensis** Širj. et Rech. f., Symb. Afgh. III: 52, Fig. 50, 51. (1957).

Distr. sp. Pam.—Al., Afghanistan (Nuristan).

As compared with the figure of *A. jagnobicus* Lipsky in Fl. URSS XII, Tab. IV–3, var. *shitvensis* Širj. et Rech. f. is specifically different from *A. jagnobicus*, and rather resembles *Astr. supraglaber* (*A. macrostegius*) described from the same locality.

Astragalus (Brachycarpus) **miseriflorus** Širj. et Rech. f., Symb. Afgh. III: 53, Fig. 5, 53 (1957).

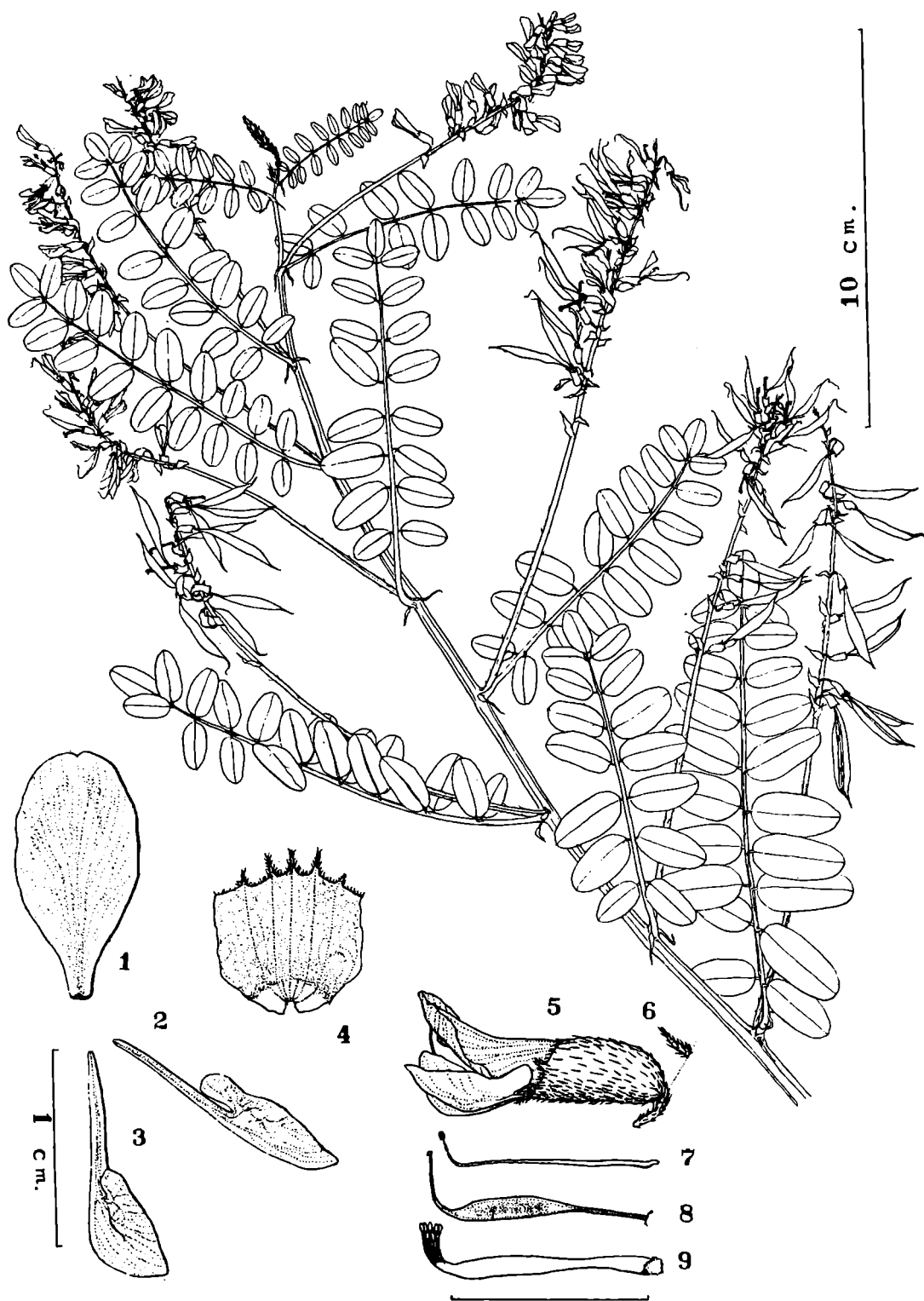


Fig. 63. *Astragalus nuristanicus* Kitam.: 1 Standard, 2 Wing, 3 Keel, 4 Calyx, 5 Flower, 6 Bracteole, 7 Stamen, 8 Pistil, 9 Stamens. (Nuristan: Shabul Gul).

Distr. Afghanistan (C).

Astragalus (Cenantrum) **pseudomongholicus** Širj. et Rech. f., Symb. Afgh. III: 55, Fig. 54, 55 (1957).

Distr. Afghanistan (Nuristan, C).

Astragalus (Cenantrum) **tecti-mundi** Freyn in Bull. Herb. Boiss. IV: 456 (1904). —Gontsch., Fl. URSS XII: 31, Tab. II-1 (1946). —Rechinger f., Symb. Afgh. III: 56 (1957).

Distr. Afghanistan (Nuristan), Pam.-Al.

Astragalus (Chlorostachys) **microdontus** Baker in J. L. S. XVIII: 46 (1880).

Distr. Pakistan (Kuram).

Astragalus (Chlorostachys) **nuristanicus** Kitamura in Acta Phytotax. Geobot. XVI: 136 (1956). Fig. 63.

A. altissimus Rech. f., Symb. Afgh. III: 46, Fig. 41, 42 (1957).

Herbae perennes. Caulis erectus circ. 80 cm altus subglaber inferne 4.5 mm diametro superne ramosus, ramis primum ascendentibus demum in fructu plus minus divaricatis, pilis albis basifixis sparse pilosis. Folia caulina media 14–16 cm longa imparipinnata, foliola 10–17, oblonga breviter petiolulata, petiolulis 1–1.5 mm longis hirsutis, lamina 25–38 mm longa 10–19 mm lata apice rotundata mucronulata basi rotundata margine integra utrinque pilis albis adpressis modeste hirsuta, textura tenuia, petiolo hirsuto, stipulis a petiolo et inter se liberis linearibus 15 mm longis. Racemus 6–9 cm longus pilis nigris hirsutus, bracteis oblongo-lanceolatis 5–7 mm longis hirsutis. Flores purpurei 13 mm longi, pedicellis 3 mm longis apice bracteolis 2 linearibus circ. 1 mm longis praeditis. Calyx tubulosus 7 mm longus oblique truncatus dentibus 0.5–2 mm longis praeditis, pilis nigris adpressis minutis hirsutus. Vexillum extus glabrum 13 mm longum obovatum apice emarginatum. Alae 13 mm longae, auriculis 2 mm longis. Carina 13 mm longa. Stamina diadelpa. Ovarium longe stipitatum, stipite sub anthesi 5 mm longo, stylo 4 mm longo apice minute capitato glabro. Legumen 28–31 mm longum 4 mm latum utrinque attenuatum, stipite 8 mm longo, biloculare 8 ovulatum. Semen 3–3.5 mm longum laeve olivaceum.

Nuristan, Shabul Gul 3000 m (Aug. 6, 1955 S. Kitamura).—Typus in Herb. Univ. Kyoto, between Chatrass and Kushimaicot, 2100 m (Aug. 2, 1955 S. Kitamura), between Kushimaicot and Pushuki, 2200 m (Aug. 3, 1955 S. Kitamura).

Distr. Afghanistan.

This species is a vicariant of *A. chlorostachys* in Nuristan, but differs from it by the glabrous stem, the larger leaves hirsute on both surfaces and the larger pods. The flowers are intensely purple. From *A. microdontus* of Kuram valley, this species is distinguished by the longer legumes and the hirsute calyx with unequal subulate teeth.

Astragalus (Christiana) **Basineri** Trautv. in Acta Horti Petrop. IX: 444 (1866).

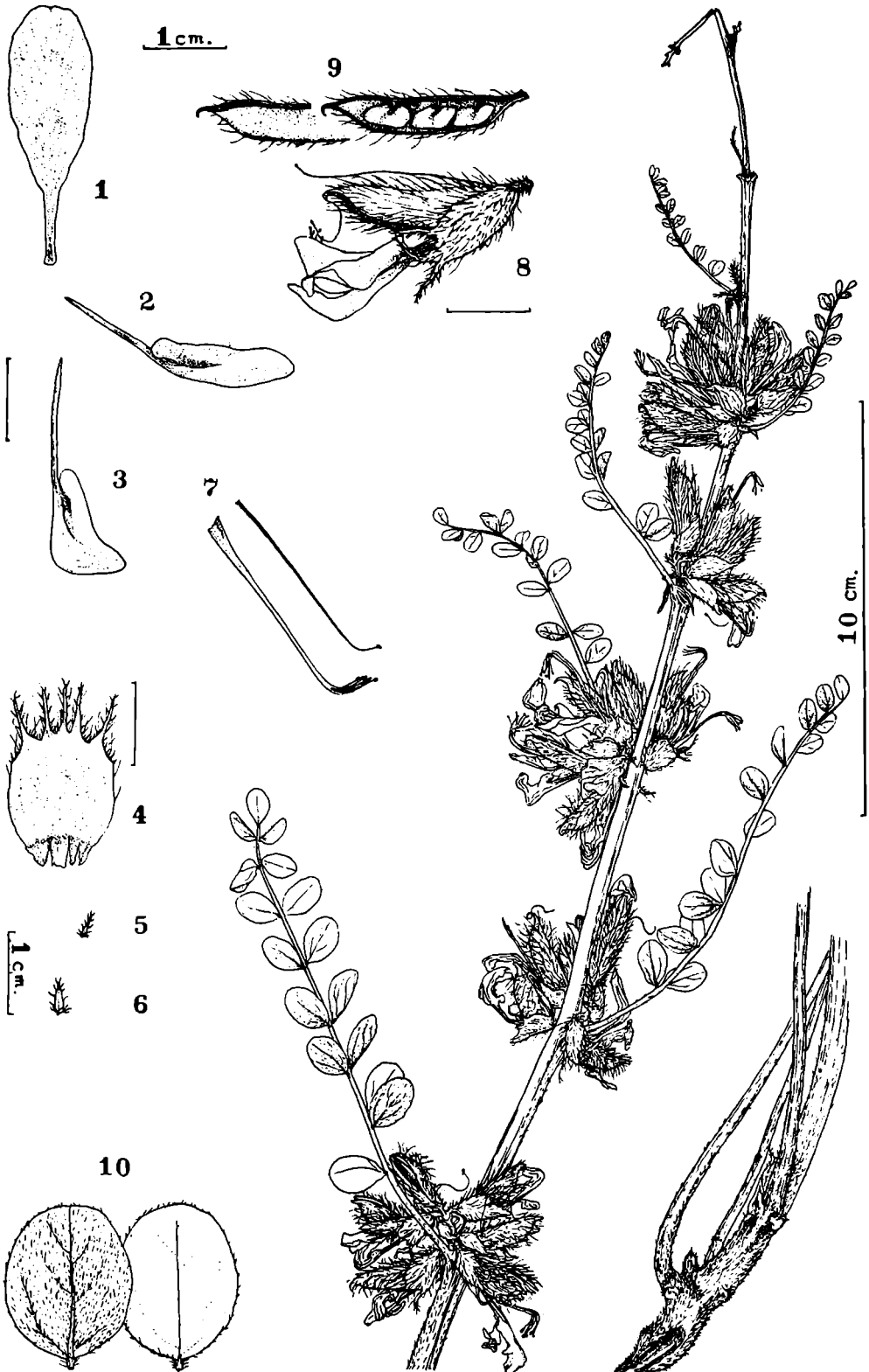


Fig. 64. *Astragalus elatior* Kitam.: 1 Standard, 2 Wing, 3 Keel, 4 Calyx, 5 Bracteole, 6 Bract, 7 Stamens, 8 Legume, 9 Vertical section of Legume, 10 Leaflets. (Between Pulikhumri and Haibak).

—Gontsch., Fl. URSS XII: 96 (1946).—Rechinger f., Symb. Afgh. III: 58.

A. Stephanianus Aitch. et Baker, T. L. S. n. III: 49 (1888).

Distr. Afghanistan (NW), Gorn.—Turkm.

Astragalus (Christiana) **borraginaceus** Rech. f., Symb. Afgh. III: 58, Fig. 58, 59.

Distr. Afghanistan (E).

Astragalus (Christiana) **elatio**r Kitamura in Acta Phytotax. Geobot. XVII: 135 (1958). **Fig. 64.**

Ab *A. orthocarpus* caule bipedale, foliolis majoribus, stipulis elongatis, leguminibus majoribus differt. Ab *A. siahderrensi* foliolis minoribus supra glabratiss, inflorescentiis interrupte dispositis divergit.

Perennis. Caulis elatus erectus and 75 cm altus ascendens teres striatus, supra medium racemiferus, ceterum simplex, inferne 7 mm diametro basi densissime albo-pubescentis, infra petiolos densiuscule nigro-pubescentis, ceterum adpresse albopubescentis. Folia inferiora magna 25–30 cm longa imparipinnata, petiolis robustis inferne purpurascens basi nigro-pubescentibus 2–2.5 mm diametro, ceterum albo-pubescentibus. Foliola 13–14 juga, late ovato-elliptica 16–17 mm longa 10–14 mm lata apice rotundata vel truncata mucronulata basi late cuneata vel rotundata, petiolulis 1 mm longis, supra glabra subtus adpresse albo-pilosa. Stipulus a basi triangulari linearis membranaceus albo et nigro-pilosus 12–14 mm longus, inter se liber. Folia caulina superiora sursum gradatim minora racemifera. Racemi abbreviati 7–9-flori, 10–18 mm longi stricti dense nigropilosi, bracteis linearibus vel lanceolatis 3–7 mm longis nigropilosis. Corolla flava 31 mm longa. Calyx tubulosus 23 mm longus 5.5 mm latus pilis longis albis et nigris dense pilosus, laciniis a basi triangulari linearibus. Vexillum oblancheolato-oblongum dorso glabrum 31 mm longum 9 mm latum. Carina 27–28 mm longa antice rectangula. Alae 29 mm longae, laminis oblongis 16 mm longis cum auriculis 2.5 mm longis. Ovarium sessile. Stylus apice glaber. Legumen sine stylo 21 mm longum 5 mm latum, pilis sordide albis dense villosum, biloculare 6 ovulatum. Semina reniformia 4.5–6.5 mm longa brunnea.

Between Pulikhumri and Haibak (June 27, S. Kitamura).—Typus in Herb. Univ. Kyoto.

Distr. Afghanistan.

Astragalus (Christiana) **leucomelas** Bunge, Astrag. I: 32 (1868), II: 38 (1869).

—Boiss., F. O. II: 278.—Rechinger f., Symb. Afgh. III: 60.

Distr. Afghanistan (E).

Astragalus (Christiana) **neo-albovillosus** Kitamura in Acta Phytotax. Geobot. XVI: 135 (1958).

Species *A. tephrosioides* affinis sed a quo floribus majoribus, foliolis 13–15 jugis emarginatis minoribus divergit. Ab *A. Stephaniano* calycis dentibus longioribus, petalis luteis differt.



Fig. 65. *Astragalus neo-albovillosus* Kitam.: 1 Standard, 2 Wing, 3 Keel, 4 Calyx, 5 Flower, 6 Bracteole, 7 Stamen, 8 Pistil, 9 Stamens. (Shibar Pass).

Rhizoma obliquum vel repens incrassatum lignescens 5–8 mm diametro. Caulis inferne simplex, supra medium racemis abbreviatis praeditus, caespitosus erectus vel ascendens 25–30 cm altus inferne 3–4 mm diametro, densissime albo-pilosus, medio pilis albis et nigris mixte pubescens, superne pilis nigris densissime et pilis albis paucis pilosus. Folia caulina infima sub anthesi defoliolata, petiolis persistentibus, inferiora et media 13–15 cm longa, petiolo robusto divaricato adpresse albo-piloso, stipulis inter se liberis a basi triangulari linearibus 6–8 mm longis membranaceis pilosis, imparipinnata, foliola 11–16 juga saepe sub-alternatim disposita, conduplicata oblonga vel elliptica 9–13 mm longa apice emarginata basi cuneato-rotundata, petiolulis 0.5 mm longis utrinque modeste albo-tomentosa. Racemi abbreviati 5–9 mm longi, 5–6 flori, pilis albis et nigris pilosi, bracteis lineari-lanceolatis 4 mm longis, pedicellis 1 mm longis. Corolla flava 22 mm longa. Calyx tubuloso-campanulatus basi obliquus dorso inflatus, 16 mm longus dense albo-villosus, laciniis basi triangulari linearibus 8 mm longis. Vexillum obovato-oblongum 22 mm longum 11 mm latum apice emarginatum basi late unguiculatum dorso glabrum. Carina 17 mm longa antice rectangula. Alae 18.5 mm longae, auriculis 2.5 mm longis. Stylus apice glaber. Ovarium sessile dense villosum 12 ovulatum biloculare.

Shibar Pass 3000 m (June 24, 1955 S. Kitamura).—Typus in Herb. Univ. Kyoto.

Distr. Afghanistan.

Astragalus (Christiana) **orthocarpus** Boiss., Diag. Ser. I, IX: 68 (1849), F. O. II: 276.

Distr. Afghanistan (E).

Astragalus (Christiana) **siahderrensis** Širj. et Rech. f., Symb. Afgh. III: 60, Fig. 60, 61 (1957).

Distr. Afghanistan (C).

Astragalus (Christiana) **Sieversianus** Pallas, Astrag. 15 (1800).—Aitch., T. L. S. n. III: 50.—Gontsch., Fl. URSS XII: 101, Tab. VIII-1 (1946).—Rechinger f., Symb. Afgh. III: 61 (1957).

Distr. Tianshan, Dz.-Tarb., Pam.-Al., Iran, Afghanistan.

Astragalus (Christiana) **tephrosioides** Boiss., Diag. Ser. I, IX: 69 (1849), F. O. II: 272.—Rechinger f., Symb. Afgh. III: 61 (1957).

Astragalus (Christiana) **virgaurea** Kitamura in Acta Phytotax. Geobot. XVI: 137 (1956). Fig. 66.

Astragalus sulfuratus Rechinger f. et Gilli, Symb. Afgh. III: 61, Fig. 62, 63 (1957).

Species A. orthocarpo affinis a quo foliis longioribus stipulis apice longe acuminatis, floribus ebracteolatis, 4–6, breviter racemosis, leguminibus latioribus divergit.

Herbae perennes. Caulis ascendens ultra pedalis inferne 4 mm diametro, sulcato-striatus pilis albis basifixis dense hirsutus, supra medium flexuosus racemiferus, racemis brevibus densifloris, internodiis 1.5–2.5 cm longis. Folia caulina media 13–16 cm

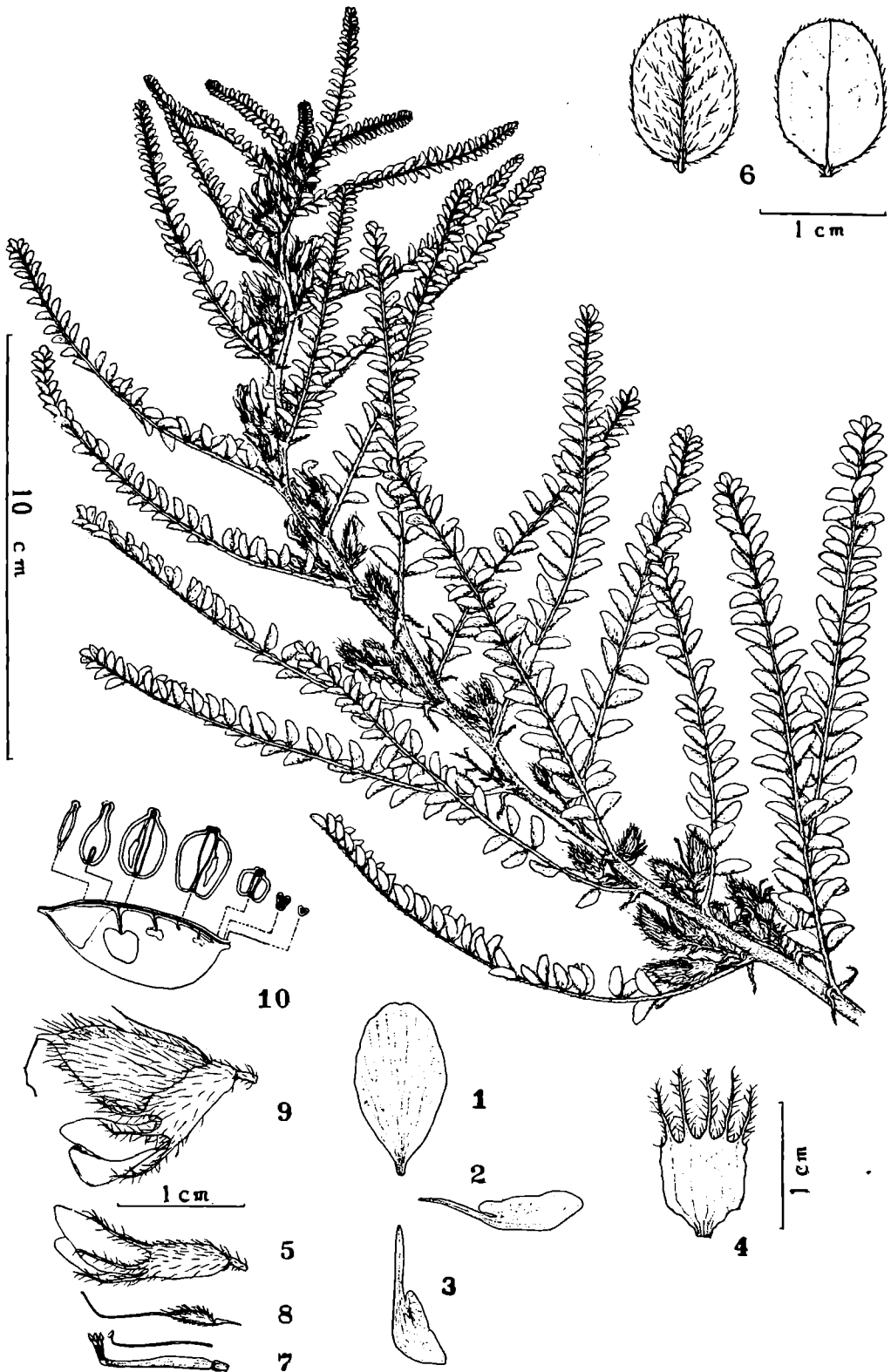


Fig. 66. *Astragalus virgaurea* Kitam.: 1 Standard, 2 Wing, 3 Keel, 4 Calyx, 5 Flower, 6 Folioles, 7 Stamens, 8 Pistil, 9 Legume, 10 Vertical and transversal sections of Legume. (Prov. Kabul: Latamand Pass, Mullaomar).

longa imparipinnata, foliola 42–47 approximativ disposita ovatorotundata in sicco saepe conduplicata, petiolulis 0.8–1 mm longis, lamina 6–10 mm longa, 5–7 mm lata apice et basi rotundata supra glabra subtus pilis longis albis adpressis hirsuta, petiolo albo-hirsuto, stipulis basi petiolo adnatis lanceolatis 10 mm longis membranaceis. Folia caulina superiora sursum gradatim minora. Inflorescentia ut virgaurea, racemis axillaribus congestis, 4–6 floris 2.5–3 cm longis (cum floribus) bracteis linearibus 5 mm longis, pedicellis 1.5–2.5 mm longis. Flores 17 mm longi flavi. Calycis tubus 6 mm longus 3 mm latus pilis albis longis hirsutus, lobi linearilanceolati 6 mm longi. Vexillum arcuato-ascendens 18 mm longum emarginatum glabrum. Alae 15.5 mm longae basi calycis tubo affixae, auriculis 1.2 mm longis. Carina alis brevior, 13 mm longa. Stamina diadelpa. Ovarium sessile dense villosum 7–8 ovulatum. Stylus 9 mm longus minute capitatus glaber. Legumen 10–12 mm longum 5 mm latum apice acutum dense villosum biloculare ventre carinatum dorso leviter sulcatum. Semina brunnescentia 3 mm longa.

Prov. Kabul, Lataband Pass, Mullaomur, 2200 m (Jun. 15, 1955 S. Kitamura).—Typus in Herb. Univ. Kyoto.

Distr. Afghanistan (E).

Astragalus (Chronopus) **albo-villosus** Kitamura in Acta Phytotax. Geobot. XVI: 137 (1956). Fig. 67.

Herbae perennes. Caulis ultra pedalis ramosus, ramis ascendentibus, teres striatus 5–6 mm diametro pilis albis dense villosus. Folia imparipinnata 15–17.5 cm longa, petiolis dense albo-villosis, foliola copiosa 48–54 anguste oblonga 8–30 mm longa 4–10 mm lata basi rotundata, utrinque pilis basifixis albis dense hirsuta, petiolulis 1 mm longis, stipulis lineari-lanceolatis membranaceis 15 mm longis petiolo basi adnatis. Racemi numerosi axillares ascendentes 7–9 cm longi dense albo-villosi. Flores 16 mm longi, pedicellis 3–3.5 mm longis, bracteis linearibus membranaceis pilosis 12–13 mm longis, bracteolis linearibus 2 mm longis pilosis. Calyx campanulatus albo-villosus, tubo 6–7 mm longo, lobis linearibus 9–12 mm longis pilosis. Vexillum flavum glabrum 18 mm longum 12 mm latum. Alae 17 mm longae. Carina 17 mm longa. Ovarium sessile dense villosum. Stylus glaber apice minute capitatus. Legumen apice longe acuminatum 17 mm longum (sine acumine), 7 mm latum dense albavillosum biloculare.

Nuristan, Chatrass, 2100 m (Aug. 2, 1955 S. Kitamura).—Typus in Herb. Univ. Kyoto.

This species is characterized by the large leaves with numerous (48–54) leaflets and the calyx with long linear teeth (9–12 mm).

Distr. Afghanistan.

Astragalus (Chronopus) **spinescens** Bunge, Astr. I: 42 (1868), II: 64 (1869).—Boiss., F. O. II: 301.—Gontscharov, Fl. URSS XII: 233, Tab. XVI-1 (1946).—Rech. f., Symb. Afgh. III: 111 (1957).

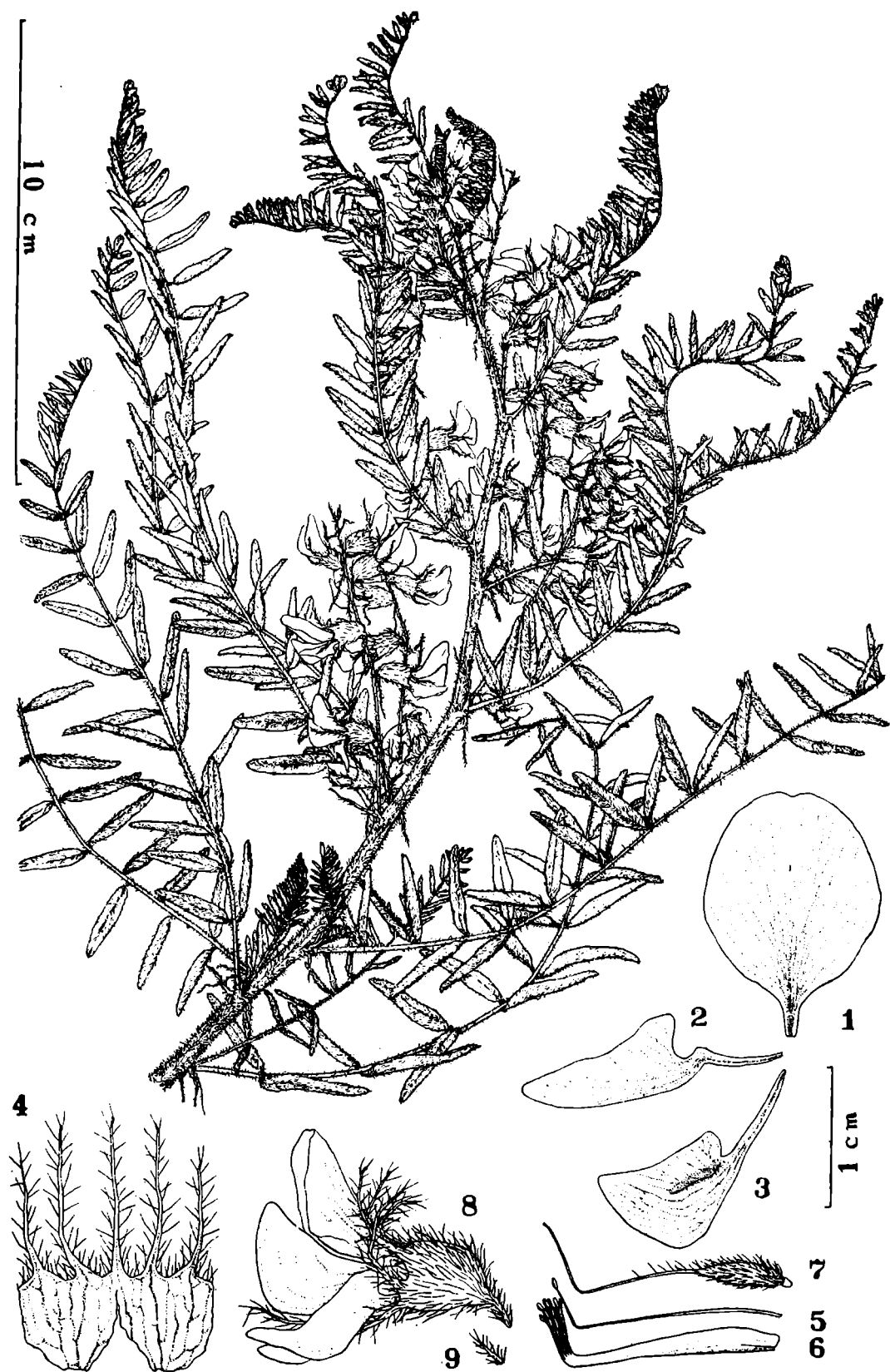


Fig. 67. *Astragalus albo-villosus* Kitam.: 1 Standard, 2 Wing, 3 Keel, 4 Calyx, 5 and 6 Stamens, 8 Flower, 9 Bracteole. (Nuristan : Chatrass).

Distr. Iran, Afghanistan (SW), Syr-Dar.

Astragalus (*Coluteoparpus*) **coluteocarpus** Boiss., *Diag. Ser. I*, IX: 65 (1849), *F. O. II*: 271.—Baker, *F. B. I. II*: 130.—Gontscharov, *Fl. URSS XII*: 23, Tab. XXXVI-1 (1946).—Rech. f., *Symb. Afgh. III*: 56 (1957).

Pagman near Kabul (July 15, 1955 S. K.), Nuristan: Between Kushitaki and Pronz (Aug. 4, 1955 S. K.).

Distr. Afghanistan, Pam.-Al., Himalaya.

Astragalus (*Diplothea*) **graveolens** Buch.-Ham. ex Benth. in Royle, *Ill.* 199 (1835).—Baker, *F. B. I. II*: 131.—Rech. f., *Symb. Afgh. III*: 43 (1957).

A. medullaris Boiss., *Diag. Ser. I*, IX: 66 (1849).

A. rotundifolius Royle, *Ill.* 199 (1835).

Nuristan: Between Chatrass and Budigrah (Aug. 2, 1955 S. K.).

Distr. Afghanistan, Pakistan, Himalaya: from Kashmir to Kumaon.

This species is classified into *Diplothea*, but our specimens have no bracteole under the flowers.

Astragalus (*Diplothea*) **gymnopodus** Boiss., *Diag. Ser. I*, IX: 66 (1849), *F. O. II*: 268.

Distr. Afghanistan.

Astragalus (*Diplothea*) **nigritus** Širj. et Rech. f., *Symb. Afgh. III*: 43, Fig. 37, 38 (1957).

var. **vegestior** Širj. et Rech. f., l. c.

Distr. sp. Afghanistan (C, E).

Astragalus (*Diplothea*) **Vicia** Širj. et Rech. f., *Symb. Afgh. III*: 45, Fig. 39, 40 (1957).

Distr. Afghanistan (Nuristan).

Astragalus (*Erionotus*) **chamaerionotus** Rech. f., *Symb. Afgh. III*: 66, Fig. 68, 69 (1917).

Distr. Afghanistan (N, E).

Astragalus (*Erionotus*) **erionotus** Boiss., *F. O. II*: 279 (1872).

Distr. Afghanistan (Reg. Cabulico).

Astragalus (*Erionotus*) **kuramensis** Baker in *Journ. Linn. Soc. XVIII*: 46 (1880), *XIX*: Tab. 5.

Distr. Afghanistan (Kuram).

Originally described as *Hypoglottis*, but Boissier treated as *Erionotus*.

Astragalus (*Erionotus*) **orbiculatus** Ledeb., *Flora Alt. III*: 311 (1831), *lc. Pl. Ross. III*: t. 290.—Boiss., *F. O. II*: 278.—Gontsch., *Fl. URSS XII*: 113.

Distr. Aralo-Kasp., Pribalx., Amu-Dar., Syr-Dar., Afghanistan.

Astragalus (*Erionotus*) **pellitus** Bunge, *Astrag. I*, 33 (1868), *II*: 39 (1869).—Boiss., *F. O. II*: 279.—Aitch., *T. L. S. n. III*: 50.

Distr. Afghanistan, Iran.



Fig. 68 *Astragalus Jabbor-Khailii* Kitam.: 1 Standard, 2 Wing, 3 Keel, 4 Calyx, 5 Flower, 6 Stamens, 7 Pistil, 8 Legume, 9 Vertical section of Legume, 10 Stipules and Leaflet. (Nuristan: Eschtaway).

Astragalus (Erionotus) **polybotrys** Boiss., *Diag. Ser. I*, IX: 64 (1894), F. O. II: 278.

Distr. Afghanistan, Pakistan.

Astragalus (Erionotus) **rhizocephalus** Baker, *J. L. S. XVIII*: 46 (1880).—Boiss. et Buser, F. O. Suppl. 178.

Distr. Afghanistan (Kuram).

This is also first described as *Hypoglottis*.

Astragalus (Hemiphragmium) **luteocarpus** Baker, *J. L. S. XVIII*: 47 (1850).—Boiss. et Buser, F. O. S.: 177.

Distr. Afghanistan (Kuram).

Astragalus (Hololeios) **hololeios** Bornm. in Engler, *Bot. Jahrb. LXVI*: 226 (1934).—Širj. et Rech. f., *Symb. Afgh. III*: 114, Fig. 133, 134, 135 (1957).

Distr. Afghanistan (E).

Astragalus (Komaroviella) **Jabbor-Khailii** Kitamura in *Acta Phytotax. Geobot. XVI*: 138 (1956). **Fig. 68.**

Astragalus bagramiensis Širj. et Rech. f., *Symb. Afgh. III*: 50, Fig. 45, 46, 47 (1957).

Suffrutex minutissimus basi ramosissimus, ramis hornotinis basi procumbentibus superne ascendentibus 3–6 cm altis 0.5–0.7 mm diametro pilis albis basifixis adpressis dense oblecto. Folia 16–20 mm longa imparipinnata, foliola circ. 11, obovata 2 mm longa 1–1.2 mm lata apice rotundata utrinque pilis albis adpressis dense hirsuta, stipulis ovatis 1 mm longis acutis basi petiolo leviter adnatis plerumque caulinalibus. Racemi axillares sub anthesi 15–20 mm longi (cum pedunculo) post anthesin ad 4.7 mm longi. Flores 2–5, bracteis 0.5 mm longis, pedicellis 1.5–2 mm longis ebracteolatis. Calyx campanulatus, tubo 1.5 mm longo pilis albis dense hirsuto, laciniis 2.2 mm longis linearibus. Vexillum 6.5 mm longum emarginatum glabrum. Alae 5.5 mm longae. Carina 5.8 mm longa violascens. Stylus glaber apice minute capitatus. Legumen falcatum uniloculare acuminatum 5.5–6 mm longum, 2.5 mm latum dense albohirsutum, stipite 0.8 mm longo, ventre leviter carinatum dorso sulcatum. Semina olivaceo-brunnea 2 mm longa.

Nuristan, Eschtaway (Shitve) 2550 m (Aug. 5, 1955 S. Kitamura).—Typus in Herb. Univ. Kyoto.

Distr. Afghanistan (E).

This is a very small suffrutex with the purple flowers. The whole plant densely covered with short white hairs.

The specific name is dedicated to Mr. Abdul Majid (his pen name, Jabbor Khail), Hakim-a-Kalan-a-Kunarha who gave the writer the facilities of travelling in Nuristan.

Astragalus (Komaroviella) **truncato-alatus** Širj. et Rech. f., *Symb. Afgh. III*: 52, Fig. 48, 49 (1957).

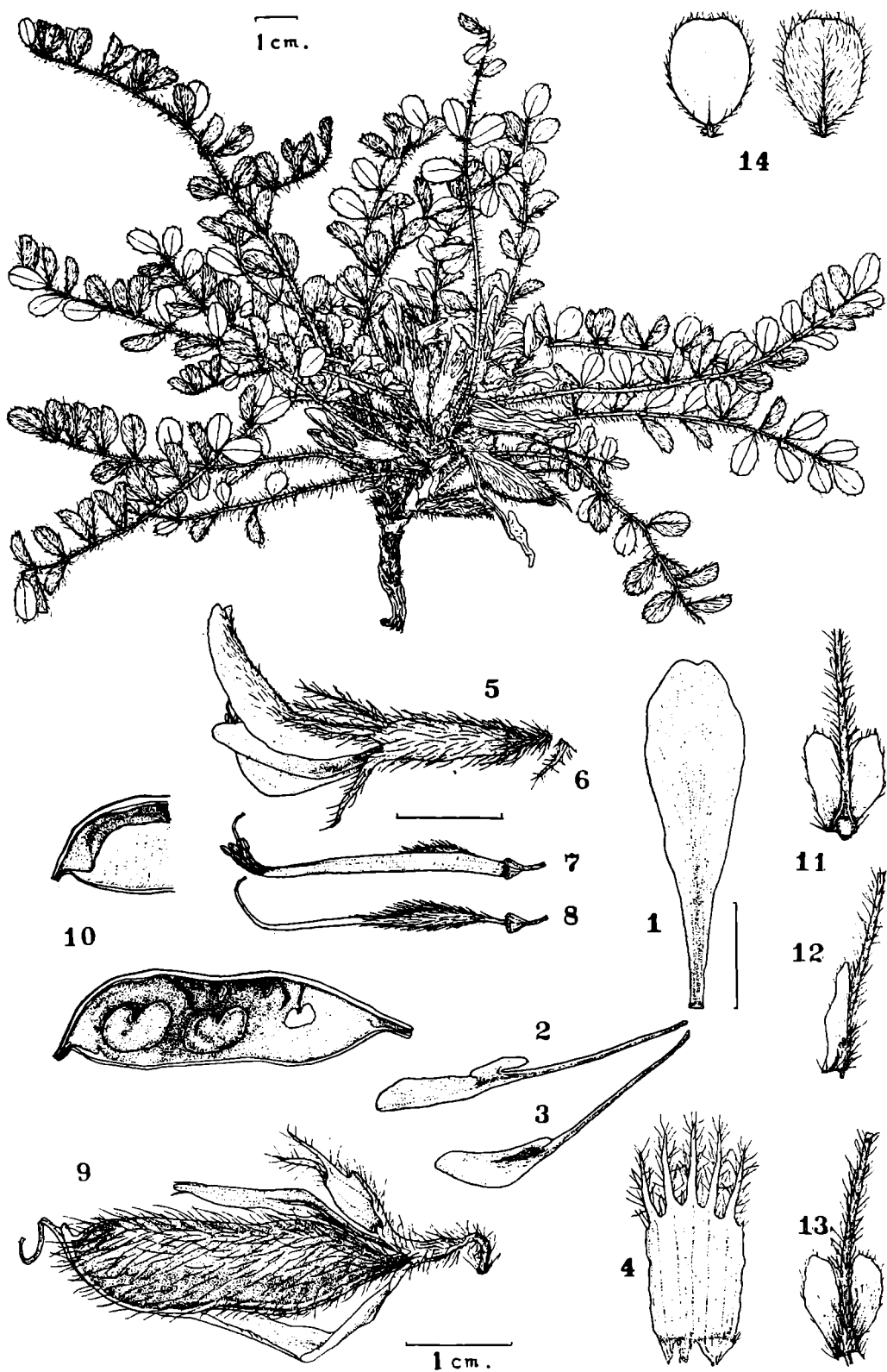


Fig. 69. *Astragalus patenti-pilosus* Kitam.: 1 Standard, 2 Wing, 3 Keel, 4 Calyx, 5 Flower, 6 Bract, 7 Stamens, 8 Pistil, 9 Legume, 10 Vertical section of Legume, 11, 12, and 13 Stipules, 14 Leaflets. (Between Pulikhumri and Haibak).

Distr. Afghanistan (E).

Astragalus (Myobroma) **Aitchisonii** Širj. et Rech. f., Symb. Afgh. III: 67, Fig. 70, 71 (1957).

Astragalus buchtormensis Pall. var. ex Aitch., T. L. S. n. III: 50.

Distr. Afghanistan (W).

Astragalus (Myobroma) **angustidens** Freyn et Sint. var. **retusefoliolatus** Širj. et Rech. f., Symb. Afgh. III: 69 (1957).

Distr. Afghanistan (NW).

Astragalus (Myobroma) **Auganus** Bunge, Astrag. I: 36 (1868), II: 45 (1869).—Boiss., F. O. I: 282.

Distr. Afghanistan, Pakistan.

Astragalus (Myobroma) **Barrowianus** Aitch. et Baker in T. L. S. n. III: 50 (1888).—Rech. f., Symb. Afgh. III: 69, Fig. 72, 73 (1957).

Distr. Afghanistan (NW).

Astragalus (Myobroma) **charguschanus** Freyn in Bull. Herb. Boiss. Sér. II, IV: 764 (1904).—Gontsch., Fl. URSS XII: 219 (1946).—Rechinger f., 1. c. 70.

Distr. Afghanistan (Nuristan), Pam.-Al.

Astragalus (Myobroma) **concinus** Benth. ex Boiss., F. O. II: 285 (1872).—Rechinger f., 1. c. 70 (1957).

Distr. Afghanistan (E), Pakistan.

Astragalus (Myobroma) **Cottonianus** Aitch. et Baker, J. L. S. n. III: 51 (1888).

Distr. Afghanistan (NW).

Astragalus (Myobroma) **dscheratuensis** Širj. et Rech. f., Symb. Afgh. III: 70, Fig. 74, 75 (1957).

Distr. Afghanistan (E).

var. **viridis** Širj. et Rech. f., 1. c.

Distr. Afghanistan (Nuristan).

Astragalus (Myobroma) **Edelbergianus** Širj. et Rech. f., Symb. Afgh. III: 71, Fig. 76, 77 (1957).

Distr. Afghanistan (C).

Astragalus (Myobroma) **erythrosemis** Boiss, F. O. Suppl. 179 (1888).—Rech. f., 1. c. 74.

Distr. Afghanistan (Kuram).

Astragalus (Myobroma) **Gompholobium** Benth. ex Bunge, Astrag. I: 39 (1868), II: 50 (1869).—Boiss., F. O. II: 285 (1872).—Aitch., T. L. S. n. III: 51.

Distr. Afghanistan, Pakistan.

Astragalus (Myobroma) **Grantii** Bunge, Astrag. I: 83 (1868), II: 50 (1869).—Boiss., F. O. II: 288.

Distr. Afghanistan.

Astragalus (Myobroma) **hindukushensis** Wendelbo in Nytt Mag. Bot. I: 42;

Fig. 15 (1952).

Astragalus nuristanicus Širj. et Rech. f., Symb. Afgh. III: 77, Fig. 84, 85 (1957).
cum var. *elasoonensi*.

Nuristan: Chatrass (Aug. 2, 1955 S. K.), between Kushitaki and Pushuki (Aug. 3, 1955 S. K.).

Distr. Afghanistan (E), Pakistan (Chitral).

Leaves variable 10–23 cm long. Legumes 10–12 mm long densely villose, dorsiventrally compressed 8 mm broad, 2 chambers with 2 seeds in each.

Astragalus (Myobroma) **Honigbergeri** Širj. et Rech. f., Symb. Afgh. III: 74, Fig. 78, 79 (1957).

Distr. Afghanistan (E, C, NW).

Astragalus (Myobroma) **kurrumensis** Bunge in Acta Horti Petrop. VII: 370 (1880).

Distr. Afghanistan (Kuram).

Astragalus (Myobroma) **lanceolatus** Bunge, Astr. I: 35 (1868), II: 60 (1869).
—Boiss. F. O. II: 293.—Rech. f., Symb. Afgh. III: 74 (1957).

Distr. Afghanistan.

Astragalus (Myobroma) **magnus** Širj. et Rech. f., Symb. Afgh. III: 75, Fig. 80, 81 (1957).

Distr. Afghanistan (W).

Astragalus (Myobroma) **Neubauerianus** Širj. et Rech. f., l. c. 77, Fig. 82, 83 (1957).

Distr. Afghanistan (C, E).

Astragalus (Myobroma) **patenti-pilosus** Kitamura in Acta Phytotax. Geobot. XVII: 136 (1958). **Fig. 69.**

Astr. ischredensi affinis sed foliolis obovatis apice rotundatis nec bilobis, dense villosis, calycis dentibus longioribus tubo triplo brevioribus differt.

Subcaulis. Rhizoma obliquum elongatum lignescens gemmascens, 1–2 mm diametro ad collum basibus foliorum anni praecedenti fuscisquamatum, apice breviter ramosum, ramis apice foliis rosulatis. Folia patentia 8.5–9.5 cm longa imparipinnata, pilis gracilibus ad 3 mm longis dense patenti-pilosa, foliola 9–11 juga, obovato-oblonga 7–12 mm longa 4–6 mm lata apice rotundata mucronulata basi cuneata, petiolulis 0.5 mm longis, supra glabra subtus dense villosa, stipulis oblongis 8–10 mm longis membranaceis dense pilosis basi petioli adnatis. Flores ex axillis foliorum provenientes, interdum brevissime racemosim dispositi, racemi 6–10 mm longi 2-flori, bracteis 3–4 mm longis linearibus vel lanceolatis membranaceis pilosis, pedicellis 3–3.5 mm longis. Calyx 20–22 mm longus dense pilosus tubulosus 3–3.5 mm latus basi leviter angustatus, laciniis 7–8 mm longis lanceolato-linearibus. Corolla flava 31–35 mm longa. Vexillum oblanceolatum 31–35 mm longum 10 mm latum apice rotundatum emarginatum basi sensim angustatum, dorso pilosum. Carina 30–34 mm longa.

Alae 30–34 mm longae, auriculis 2.5 mm longis. Ovarium dense pilosum, longe stipitatum, stylus apice glaber. Legumen sine stylo 25–35 cm longum 7.5–10 mm latum dense pilosum, cum stipite 3–3.5 mm longo, biloculare, 10-ovulatum. Semina reniformia 6 mm lata fusco-brunnea nigro-punctata.

Between Pulikhumri and Haibak (June 27, 1955 S. Kitamura).—Typus in Herb. Univ. Kyoto.

Distr. Afghanistan.

Astragalus (Myobroma) **purpurascens** Bunge, Astr. I: 35 (1868), II: 42 (1869).—Boiss., F. O. II: 285.—Rech f., 1. c. 79 (1957).

Distr. Afghanistan, Pakistan.

Astragalus (Myobroma) **pyrrhotrichus** Boiss., Diag. Ser. I, IX: 73 (1849), F. O. II: 200.—Baker, F. B. I. II: 133.

Distr. Afghanistan (Reg. Cabulico), Pakistan.

Astragalus (Myobroma) **rhizanthus** Royle, Ill. Himal. Mount. 199 (1835).—Aitch., J. L. S. XVIII: 45.—Baker, F. B. I. II: 131.—Rechinger f., 1. c. (1957).

Distr. Afghanistan (E), Pakistan, Himalaya: Kashmir, Kunawar.

Astragalus (Myobroma) **tscharikarensis** Širj. et Rech. f., 1. c. 80, Fig. 87, 88 (1957).

Distr. Afghanistan (E).

Astragalus (Myobroma) **Volkii** Rech. f., 1. c. 81, Fig. 89, 90 (1957).

Distr. Afghanistan (Sarobi).

Astragalus (Rhodophaca) **laetus** Bunge, Astrag. I: 34 (1868), II: 41 (1869).—Boiss., F. O. II: 265.—Rech. f., 1. c. 42, Fig. 36.

Doab (July 10, 1955 S. K.), between Bulola and Doab in swamp (June 25, 1955 S. K.).

Distr. Afghanistan (E).

Astragalus (Scheremeteviana) **Scheremetevianus** B. Fedtsch., Trav. Mus. Bot. Acad. Pétersb. I: 125 (1902).—Borissova, Fl. URSS XII: 15, Tab. I-3 (1946).—Rechinger f., 1. c. 46 (1957).

Distr. Afghanistan (Nuristan), Pam.-Al.

Astragalus (Sesbanella) **otiporensis** Boiss., F. O. II: 271 (1872).

Distr. Afghanistan.

Astragalus (Sesbanella) **pseudo-Hofmeisteri** Širj. et Rech. f., Symb. Afgh. III: 48, Fig. 43, 44.

Distr. Afghanistan (Nuristan).

Astragalus (Stipitella) **Massagetovii** B. Fedtsch. in Tr. Tadz. Bazui Akad. Nauk II: 144 (1936), Fl. Tadz. V: 307–308, tab. 33 (1937).—Gontsch., Fl. URSS XII: 22, Tab. XVII-3 (1946).—Rech. f., 1. c. 56 (1957).

Distr. Afghanistan, Pam.-Al.

Astragalus (Stipitella) **parvistipulus** Rech. f., Symb. Afgh. III: 56, Fig. 56, 57

(1957).

Distr. Afghanistan (SE), Iran.

Astragalus (Theiochrus) **ispahanicus** Boiss., Diag. Ser. I, II: 52 (1843), F. O. II: 270.—Gontsch., Fl. URSS XII: 13, Tab. XXXVI—4 (1946).—Rech. f., 1. c. 48.

Distr. Iran, Afghanistan, Gorn.—Turkm., Pamiro-Al.

Astragalus (Theiochrus) **sulfureus** Bunge, Astr. I: 29 (1868), II: 33 (1869).—Boiss., F. O. II: 270.

Distr. Afghanistan (Reg. Cabulico).

Astragalus (Xenophaca) **recollectus** Rech. f., Symb. Afgh. III: 65, Fig. 66, 67 (1957).

Distr. Afghanistan.

Subgen. **Tragacantha**.

Astragalus (Macrophyllium) **Elisabethae** Širj. et Rech. f., Symb. Afgh. III: 120, Fig. 142, 143 (1957).

Distr. Afghanistan (Lataband).

Astragalus (Macrothrix) **farakulumensis** Širj. et Rech. f., Symb. Afgh. III: 115, Fig. 136, 137 (1957).

Distr. Afghanistan (C, NE).

Astragalus (Macrothrix) **ghaznianus** Širj. et Rech. f., 1. c., Fig. 138, 139 (1957).

Distr. Afghanistan (E).

Astragalus (Macrothrix) **glabrifolius** Bunge, Astr. I: 93 (1868), II: 167 (1869).—Boiss., F. O. II: 344.—Rech. f., Symb. Afgh. III: 118 (1957).

Distr. Afghanistan (E).

Astragalus (Macrothrix) **splendidissimus** Širj. et Rech. f., Symb. Afgh. III: 119, Fig. 140, 141 (1957).

Charikar (June 23, 1955 S. K.).

Distr. Afghanistan (E, C).

Astragalus (Microthrix) **heratensis** Bunge, Astrag. I: 83 (1868), II: 145 (1869).—Boiss., F. O. II: 335.—Rech. f., 1. c. 120 (1957).

Distr. Afghanistan (W).

Astragalus (Microthrix) **strobiliferus** Royle, Ill. Himal. Mount. 199 (1835).—Camb. in Jacquem., Voy. Bot. 39, t. 47 (1844).—Baker, F. B. I. II: 135.—Aitch., J. L. S. XVIII: 45.—Rech. f., Symb. Afgh. III: 120 (1957).

Distr. Afghanistan (C, E), Pakistan: Chaman Pass (May 31, 1955 S. K.), Himalaya; Kashmir, Kunawar.

Subgen. **Trimeniaeus**.

Astragalus (Ankylotus) **commixtus** Bunge in Arb. Nat. Ver. Riga I: 246 (1847).—Boiss., F. O. II: 235.—Gontsch., Fl. URSS XII: 302, Tab. XX—2 (1946).

Distr. Afghanistan, Iran, Aral.—Kasp., Asia Minor, E. Europe.

Astragalus (Campylotrichon) **campylotrichus** Bunge, Astr. Turk. 207. (1880).—Gontsch., Fl. URSS XII: 288, Tab. XXI-2 (1946).—Rech. f., Symb. Afgh. III: 36 (1957).

Distr. Afghanistan, Pam.-Al., Syr-Dar., Tianshan, Gorn.-Turkm.

Astragalus (Campylotrichon) **jijaensis** Širj. et Rech. f., Symb. Afgh. III: 31, Fig. 22, 23 (1957).

Distr. Afghanistan (SW).

Astragalus (Dipelta) **dipelta** Bunge in Acta Horti Petrop. VII: 368 (1880).—Gontsch., Fl. URSS XII: 317, Tab. XX-4 (1946).—Rech. f., l. c. 35 (1957).

Distr. Afghanistan, Gorn.-Turkm., Pam.-Al., Tianshan.

Astragalus (Falcinellus) **amherstianus** Benth. ex Royle, Ill. Him. Mount. 199 (1835).—Baker, F. B. I. II: 119.—Rech. f., l. c. 32 (1957).

Distr. Afghanistan (Kuram), Pakistan, Himalaya: Kishtwar, Kunawar, Chamba, Simula.

Astragalus (Falcinellus) **bakaliensis** Bunge in Mém. Sav. Étrang. Pétersb. VII: 268, t. 14 (1851).—Boiss., F. O. II: 231.—Rech. f., l. c. 33 (1957).—Gontsch., Fl. URSS XII: 297, Tab. XXI-7 (1946).

Shishigar (June 11, 1955 S. K.).

Distr. Afghanistan, Iran, Central Asia.

Astragalus (Falcinellus) **camporum** Benth. ex Boiss., F. O. II: 231 (1872).—Rech. f., l. c. 33.

Shishigar (June 11, 1955 S. K.).

Distr. Afghanistan, Pakistan.

Astragalus (Falcinellus) **hippocrepidis** Benth. ex Bunge, Astrag. I: 5 (1868), II: 5 (1869).—Boiss., F. O. II: 231.—Aitch., J. L. S. XVIII: 44.—Rech. f., l. c. 33 (1957).

A. subumbellatus Klotzsch., Waldem. 159, t. 3 (1862).—Baker, F. B. I. II: 119.

Distr. Afghanistan, Pakistan, Kashmir.

Astragalus (Falcinellus) **sarobiensis** Rech. f., Symb. Afgh. III: 34, Fig. 24, 25 (1957).

Distr. Afghanistan (E).

Astragalus (Fedtschenkoana) **campylorrhynchus** Fischer et Mey., Index Sem. Horti Petrop. I: 23 (1835).—Boiss., F. O. II: 233.—Aitch., T. L. S. n. III: 49.—Gontsch., Fl. URSS XII: 290, Tab. XXII-2 (1946).—Rech. f., l. c. 36 (1957).

Distr. Caucasus, Central Asia (common), Asia Minor, Iran, Afghanistan, Pakistan.

Astragalus (Harpilobus) **arpilobus** Kar. et Kir. in Bull. Soc. Nat. Mosc. XV: 336 (1842).—Gontsch., Fl. URSS XII: 292, Tab. XXI-10 (1946).

Astragalus gyzensis Aitchison (non Delile), T. L. S. n. III: 49.

Distr. Afghanistan, E. Europe, Central Asia (common).

Astragalus (Harpilobus) **corrugatus** Bert., Amoen. Ital. 38 (1819).—Boiss., F.

O. II: 232.—Gontsch., Fl. URSS XII: 294, Tab. XXI-9 (1946).—Rech. f., l. c. 32 (1957).

Astragalus quadrisulcatus Bunge in Arb. Naturf. Ver. Riga I: 248 (1847), Ic. Pl. Lehm., t. 10-1 (1849).—Boiss., F. O. II: 232.—Rech. f., l. c. 32.

Distr. Afghanistan, Iran, Mesopotamia, Egypt, Caucasus, Pakistan, Central Asia, Kyz.-Kum., Kara-Kum., Pam.-Al.

Astragalus (Harpilobus) **reticulatus** M. B., Fl. Taur.-Cauc. III: 491 (1819).—Boiss., F. O. II: 231.—Gontsch., Fl. URSS XII: 293.

Distr. E.-Europe, Aralo-Casp., Pribalx.

Astragalus (Harpilobus) **tenuijugis** Boiss., Diag. Ser. I, IX: 61 (1849).—Aitch., T. L. S. n. III: 49.

Distr. Iran, Afghanistan (W), North Africa.

Astragalus (Mirae) **mirus** Širj. et Rech. f., Symb. Afgh. III: 36, Fig. 26, 27 (1957).

Distr. Afghanistan (SW).

Astragalus (Oxyglottis) **ammophilus** Kar. et Kir. in Bull. Soc. Nat. Mosc. XV: 335 (1842).—Aitch., T. L. S. n. III: 49.—Boiss., F. O. II: 228.—Gontsch., Fl. URSS XII: 313, Tab. XXI-4 (1946).—Rech. f., l. c. 31 (1957).

Distr. Afghanistan, Caucasus, Central Asia (common).

var. **leiocarpus** Bornm. et Gauba ex Rech. f., l. c. 31 (1957).

Distr. Afghanistan (SW).

Astragalus (Oxyglottis) **biovulatus** Bunge, Astrag. I: 11 (1868), II: 11.—Boiss., F. O. II: 229.—Rech. f., l. c. 32 (1957).

Distr. Afghanistan (SW), Iran.

Astragalus (Oxyglottis) **filicaulis** Fischer et Mey. in Ledeb., Fl. Ross. I: 637 (1843).—Boiss., F. O. II: 227.—Gontsch., Fl. URSS XII: 307.—Rech. f., l. c. 32.

Distr. Central Asia (common), Afghanistan.

Astragalus (Oxyglottis) **rytilobus** Bunge, Astrag. Turk. 209 (1880).—Fl. Tadzh. V: t. 23, 24.—Gontsch., Fl. URSS XII: 308 (1946).—Rech. f., l. c. 32.

Astragalus Nawabianus Aitch. et Baker, T. L. S. n. III: 49.

Distr. Afghanistan, Iran, Central Asia (common).

Astragalus (Oxyglottis) **sesamoides** Boiss., Diag. Ser. I, IX: 59 (1849), F. O. II: 227.—Rech. f., l. c. 32.

Distr. Afghanistan (Reg. Cabulico).

Astragalus (Oxyglottis) **tribuloides** Del., Fl. Aegypt. Illustr. 70 (1813).—Boiss., F. O. II: 224.—Gontsch., Fl. URSS XII: 312, Tab. XXI-5 (1946).

var. **tribuloides**—Rech. f., l. c. 32 (1957).

Distr. Afghanistan, North Africa, Arabia, Syria, Iran, E.-Europe, Caucasus, Central Asia (common).

var. **kirghizorum** Širj. ex Rech. f., l. c. 32 (1957).

Distr. Afghanistan, Central Asia.

var. **minutus** Boiss., F. O. II: 225. —Rech. f., l. c. 32 (1957).

Distr. Egypt, Arabia, Mesopotamia, Iran, Afghanistan, Pakistan.

Astragalus (Sewerzowia) **Schmalhauseni** Bunge in Acta Horti Petrop. VIII: 369 (1880).—Gontsch., Fl. URSS XII: 298, Tab. XX-7 (1946).—Rech. f., l. c. 36 (1957).

Distr. Afghanistan, Syr-Dar., Gorn.-Turkm., Pamiro-Al., Tianshan.

Caragana afghanica Kitamura in Acta Phytotax. Geobot. XVI: 135 (1956).
Fig. 70.

Caragana nuristanica Rech. f. et Ederberg, Symb. Afgh. III: 26, Fig. 17, 18 (1957).

Suffrutex. Caulis ultra pedalis ramosus, ramis flexuosis, cortice sordide cinerascens, 2–6 mm diametro, ramis floriferis abbreviatis numerosis, basibus foliorum vetustorum obtectis. Folia 11–22 mm longa, petiolis induratis gracilibus primum dense pubescentibus demum denudatis persistentibus apice spinosis, foliolis 3–4 jugis obovato-oblongis 4.5–7 mm longis 2.5–4 mm latis apice truncatis spinulosis, spinulis 1–1.5 mm longis, utrinque pubescentibus venosis, stipulis petiolo adnatis apice subinermibus vel spinulosis. Pedicelli uniflori solum evoluti ad basin articulati, 5–6 mm longi dense pilosi. Calyx post anthesin 10 mm longus albo-villosus, dentibus 3 mm longis apice acuminatis. Legumen 4 cm longum 5 mm latum apice acuminatum basi sessile atrobrunescens demum glabratum intus glabrum. Semina oblonga vel elliptica 4 mm longa.

Nuristan: Between Kushimaicot and Pushuki, 2200 m (Aug. 3, 1955 S. Kitamura). —Typus in Herb. Univ. Kyoto.

This species is characterized by the longer (3–4 cm) glabrous pods and the villose calyx. Pedicels short, 5–6 mm long. The corolla is glabrous about 20 mm long, red-yellowish.

Distr. Afghanistan.

Caragana ambigua Stocks in Hooker, Kew Jour. IV: 145 (1852).—Boiss., F. O. II: 199.—Komarov in Acta Horti Petrop. XXIX: 305, Tab. XIX (1908).—Rech. f., l. c. 26 (1957).

Distr. Pakistan: Chaman Pass (May 31, 1955 S. K.).

Caragana aurantiaca Koehne, Dendr. 340 (1893).—Schneider, Ill. Handb. II: 102 Fig. 64, p-s. (1907).—Komarov in Acta Horti Petrop. XXIX: 250, 253 (1908).—Rech. f., l. c. 24 (1957).—Pojarkova in Fl. URSS XI: 348, Tab. XXIII-4 (1945).

C. grandiflora Aitch. (non DC.), J. L. S. XVIII: 44 n. 835.

Distr. Afghanistan, Alatau, Altai, Sungaria, Mongolia.

Caragana decorticans Hemsl. in Hooker, Ic. Pl. XVIII t. 1725 (1887).—Schneider, Ill. Handb. Laubholz. II: 97 Fig. 59 o-q₁ (1907).—Rechinger f., Symb. Afgh. III 26 (1957).

C. Aitchisonii Prain in Journ. Asiatic Soc. Bengal LXVI, II: 372 (1897).

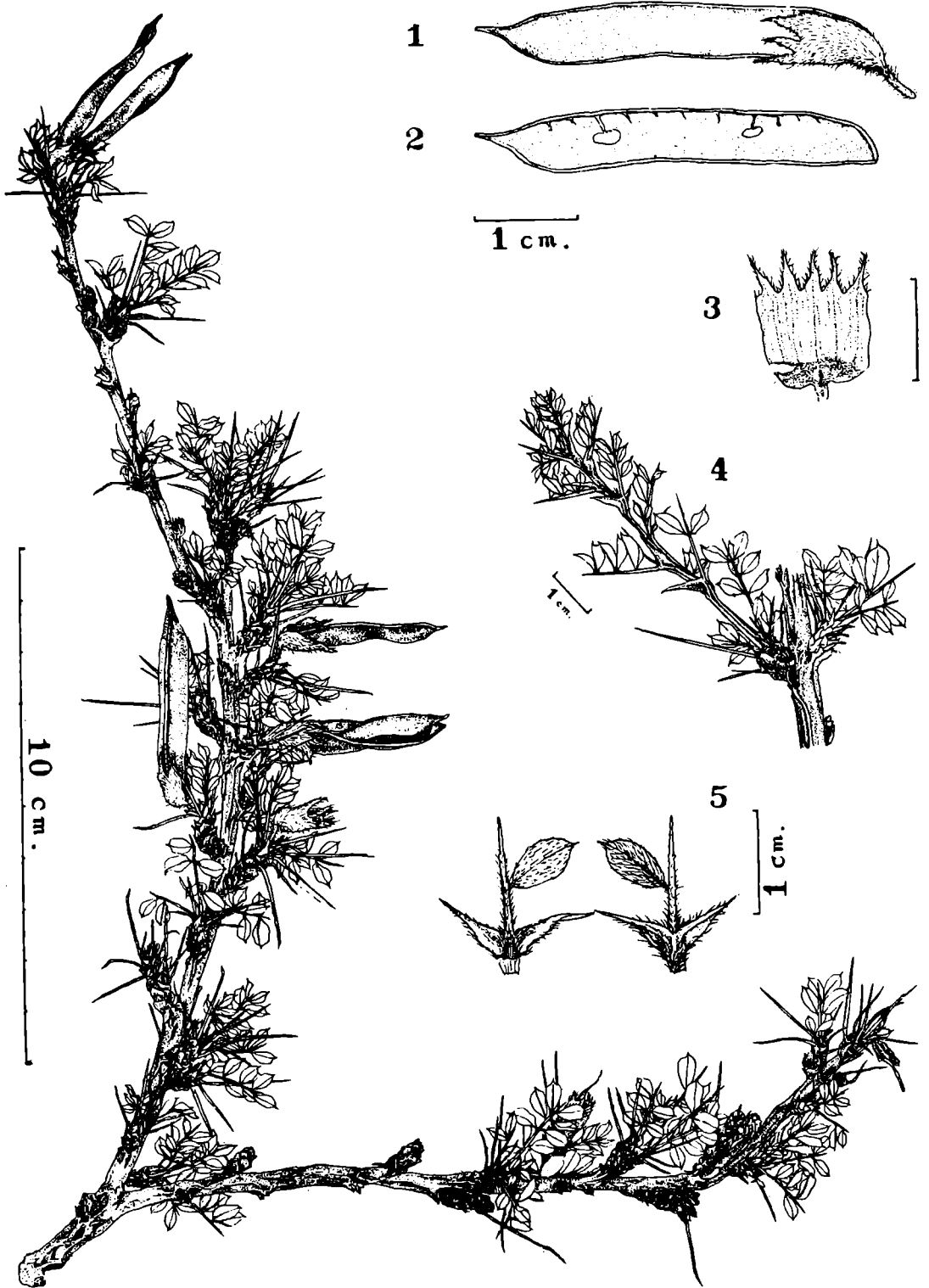


Fig. 70. *Caragana afghanica* Kitam.: 1 Legume, 2 Vertical section of Legume, 3 Calyx, 4 Young Branch, 5 Stipules. (Nuristan: Between Kushimaicot and Pushuki).

C. ambigua Aitchison (non Stocks), J. L. S. XVIII: 43.

Distr. Afghanistan.

Caragana Prainii C. K. Schneider in Bull. Herb. Boiss. 2, VII: 313 (1907), III. Hand. Laubh. II: 97 Fig. 59 r-s² (1907).—Pojarkova in Fl. URSS XI: 365 (1945).—Rech. f., l. c. 27 (1957).

C. arborescens Aitch. (non Lam.), J. L. S. XVIII: 44.

Nuristan: Between Trokikorl and Chatrass (Aug. 1, 1955 S. K.).

Distr. Afghanistan, Pam.-Al.

Peduncles solitary, not twin, stipule indistinct. Leaflets truncate at the apex and mucronate.

Caragana ulcina Stocks in Hook. Jour. Bot. IV: 145 (1852).—Schneider, III. Handb. II: 99 (1907).—Komarov, l. c. 306, Tab. XXX (1908).

Caragana brevispina Aitch. (non Royle), J. L. S. XVIII: 43, n. 286.

Distr. Afghanistan (Kuram), Pakistan.

Cercis Griffithii Boiss., F. O. II: 633 (1872).—Palibin in Fl. URSS XI: 16, Tab. 1-2a (1945).—Rech. f., Symb. Afgh. III: 2, Fig. 1 (1957).

Cercis Siliquastrum Aitch. (non L.), T. L. S. n. III: 60.

Kabul, Tomb of Baker cultivated.

Distr. Afghanistan, Pam.-Al., Gorn.-Turkm.

Chesneya acaulis (Baker) Kitamura comb. nov.

Caragara acaulis Baker, J. L. S. XVIII: 44 (1880).

Distr. Afghanistan and Pakistan (Kuram).

Chesneya afghanica Rech. f. et Köie, Symb. Afgh. III: 27, Fig. 19, 20 (1957).

Distr. Afghanistan (SW).

Chesneya Volkii Rech. f., Symb. Afgh. III: 28, Fig. 21.

Doab (July 10, 1955 S. K.).

Distr. Afghanistan.

Cicer arietinum L., Sp. Pl. 738 (1753).—Boiss., F. O. II: 560.—Aitch., T. L. S. n. III: 59.—Rech. f., l. c. 200 (1957).

Seeds were sold at markets in Kabul, Kandahar, Mazarisharif etc.

Distr. The native place is unknown. Widely cultivated in Eurasia (except Eastern Asia) and North Africa.

Cicer chorassanicum (Bunge) M. Popov in Bull. Applied Bot. Leningrad XXI, I: 180 (1829).—Rech. f., Symb. Afgh. III: 200, Fig. 238, 239 (1957).

Distr. Afghanistan, Iran.

Cicer flexuosum Lipsky in Acta Horti Petrop. XXIII: 102 (1904).—Lincz. in Fl. URSS XIII: 392, Tab. XXI-2 (1948).—Rech. f., l. c. 200 (1957).

Distr. Pam.-Al., Tianshan, Afghanistan (Nuristan).

Cicer Jacquemontii Jaub. et Spach in Ann. Sc. Nat. sér. II, XVIII: 231 (1842).—Boiss., F. O. II: 563.—Lincz. in Fl. URSS XIII: 400, Tab. XXII-1 (1948).—

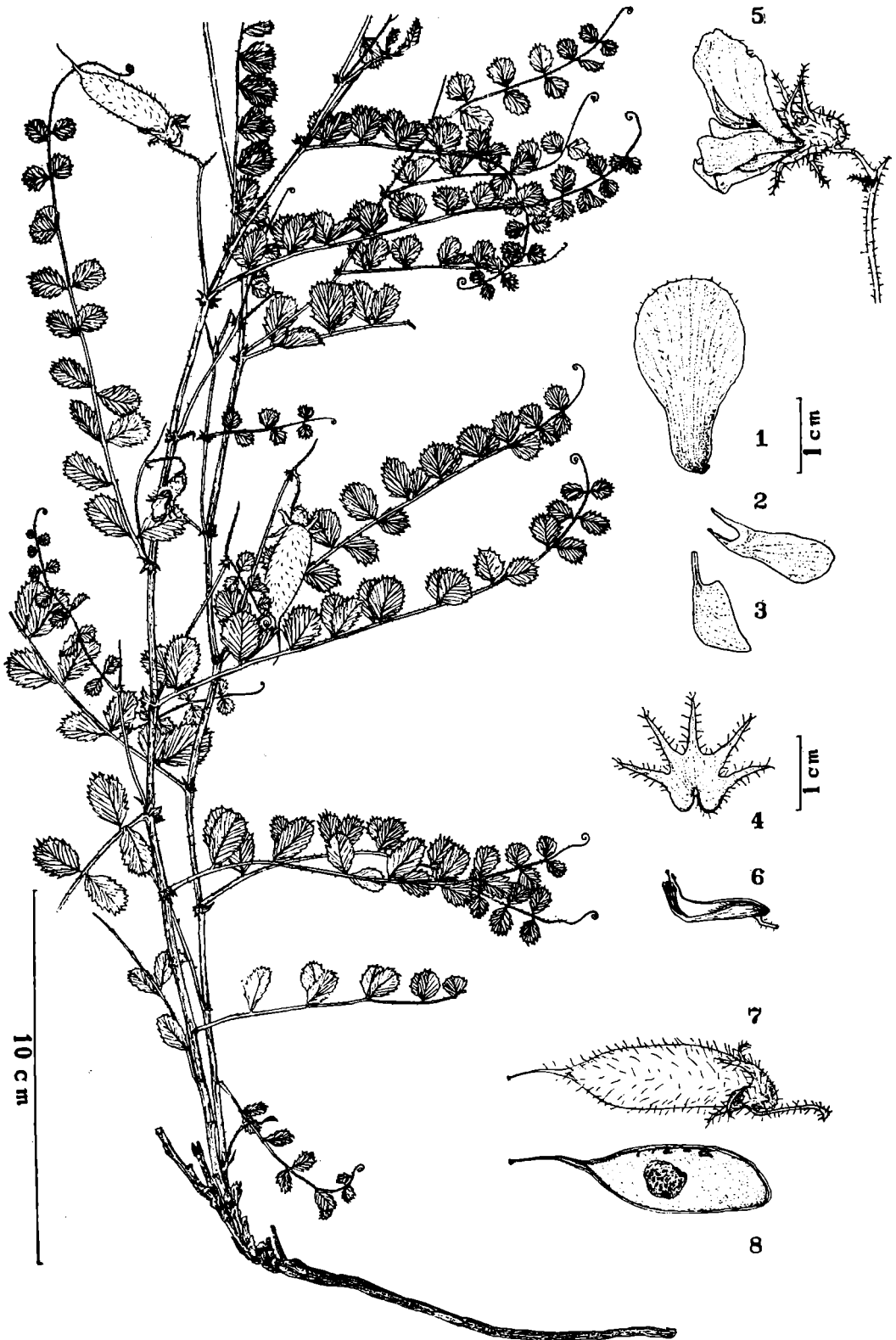


Fig. 71. *Cicer nuristanicum* Kitam. : 1 Standard, 2 Wing, 3 Keel, 4 Calyx, 5 Flower, 6 Stamens and Pistil, 7 Legume, 8 Vertical section of Legume. (Nuristan : Between Chatrass and Kushimaicot).

Rechinger f., l. c. 200 (1957).

Cicer soongaricum Baker non Steph., F. B. I. II: 176 pro parte.—Aitch., J. L. S. XVIII: 49.

Distr. Afghanistan, Pam.-Al., Tianshan, Himalaya: Piti, Lahul, Kumaon, Tibet.

Cicer macranthum M. Pop. in Bull. Univ. As. Centr. XV, Suppl. 16 (1927).—Lincz. in Fl. URSS XIII: 404, Tab. XXII-3 (1948).—Rechinger f., l. c. 202 (1957).

Distr. Afghanistan (Nuristan), Pam.-Al., Pakistan, Dz.-Kashg.

Cicer nuristanicum Kitamura in Acta Phytotax. Geobot. XVI: 136 (1956). **Fig. 71.**

Herbae perennes glanduloso-hirtae. Rhizoma longe repens. Caulis ascendens 25–40 cm altus striatus teres 2–2.5 mm diametro superne ramosus, ramis ascendentibus. Folia abrupte pinnata 10–16 cm longa, petiolo in cirrhum simplicem circinatum abeunte, foliolis 13–14 iugis approximatis dispositis late obovatis vel rotundatis, 6–16 mm longis 4–12 mm latis apice rotundatis basi late cuneatis superne argute dentatis nervis numerosis ramosis distinctis, stipulis 2.5–4 mm longis trifidis. Pedunculus axillaris uniflorus 36–37 mm longus aristis 5 mm longis praeditus, pedicellis 7–11 mm longis. Calyx basi gibbosus aperte campanulatus 12 mm longus, inaequaliter profunde laciniatus, laciniis lanceolatis acuminatis 6–7.5 mm longis. Vexillum obovatum 18 mm longum emarginatum 17 mm latum, arae 15 mm longae, auriculis 3.5 mm longis, carina 12 mm longa. Legumen oblongum apice acuminatum basi sessile 2.5–3 cm longum (sine acumine) 10–11 mm latum dense glanduloso-hirtum. Semen ovato-cordatum 5.5 mm longum basi 5.5 mm latum nigrescens sub lente albo-rugosum, rostello valde incurvo.

Nuristan: Between Chatrass and Kushimaicot (Aug. 2, 1955 S. K.), between Voma and Chatrass (Aug. 1, 1955 S. K.)—Typus. in Herb. Univ. Kyoto.

Distr. Afghanistan.

This species is related to *C. soongaricum*, but differs from it by the larger leaves with more numerous leaflets and the smaller stipules, and by the smaller flowers.

Cicer oxyodon Boiss. et Hohen., Diag. Ser. I, IX: 129 (1849).—Boiss., F. O. II: 563.—Rechinger f., l. c. 202 (1957).

Distr. Iran, Afghanistan.

Cicer pungens Boiss., Diag. Ser. II, II: 44 (1856), F. O. II: 565.—Fl. URSS XIII: 403, Tab. XXII-2 (1948).

Distr. Afghanistan, Pam.-Al.

Cicer Yamashitae Kitamura in Acta Phytotax. Geobot. XVI: 135 (1953). **Fig. 72.**

Cicer longearistatum Rech. f., Symb. Afgh. III: 201, Fig. 240, 241 (1957).

Species *C. arietino* affinis a quo omnibus partibus minoribus, pedunculis longissime aristatis, foliolis 5, seminibus 4 plo minoribus dense tuberculatis divergit.

Herbae annuae. Radix perpendicularis parce fibrosa. Caulis 20–30 cm longus basi procumbens vel a basi ascendens ramosus, 1–1.2 mm diametro, glanduloso-hirtus. Folia imparipinnata, 2.5–3 cm longa, foliola semper 5, oblonga 10–13 mm longa 3.5–5 mm lata apice rotundata basi cuneata, petiolulis 0.5 mm longis, utrinque glanduloso-

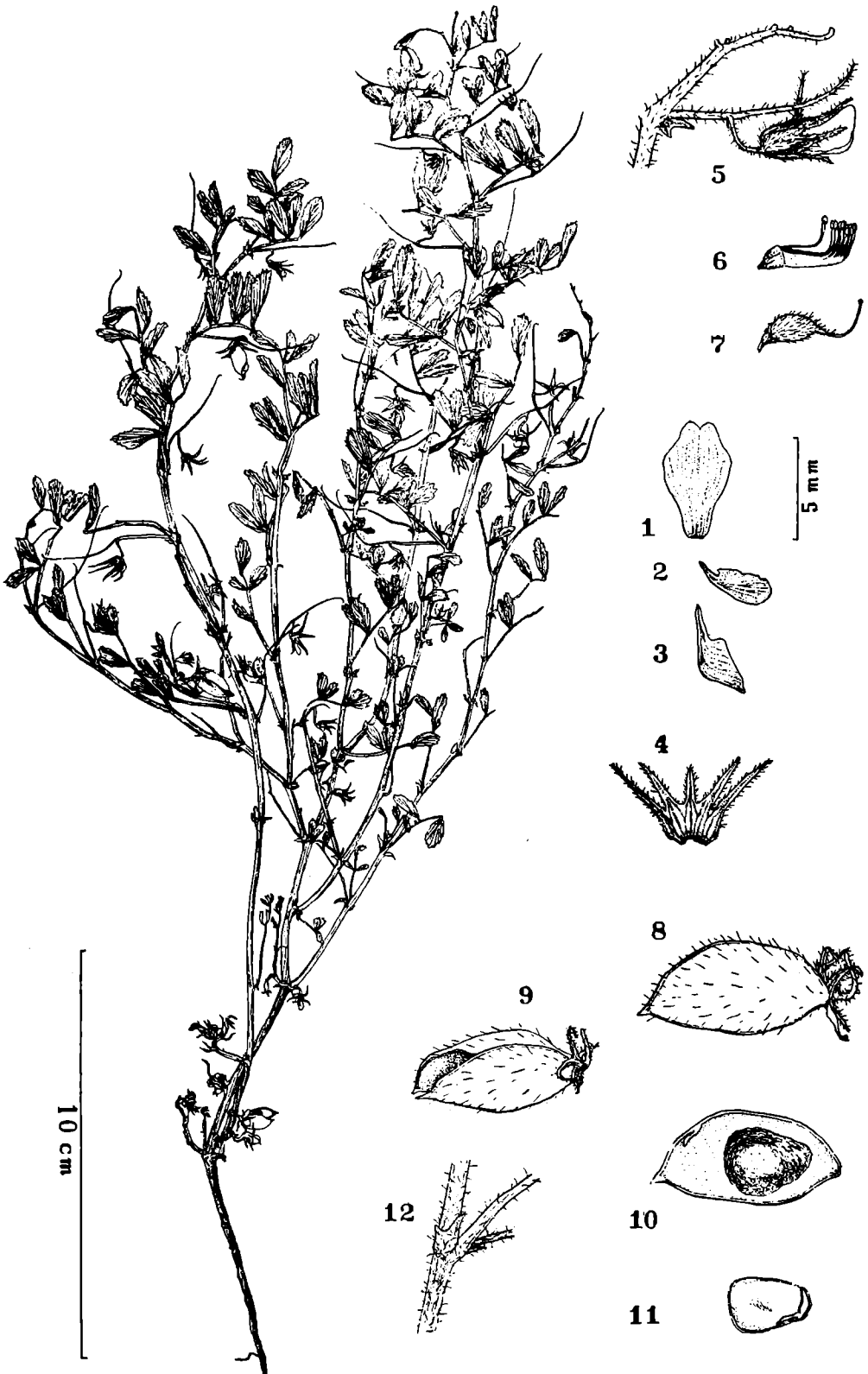


Fig. 72. *Cicer Yamashitae* Kitam.: 1 Standard, 2 Wing, 3 Keel, 4 Calyx, 5 Flower, 6 Stamens, 7 Pistil, 8 and 9 Legume, 10 Vertical section of Legume, 11 Seed, 12 Stipule, (Between Sarobi and Kabul).

hirta supra medium argute serrata, nervis numerosis distinctis, stipulis 2.5 mm longis bifidis. Pedunculus axillaris sub anthesi 4 mm demum 9–12 mm longus apice in aristam elongatam sub anthesi 7 mm longam demum 19 mm longam abiens, pedicellis sub anthesi 2 mm demum 4 mm longis deflexis. Calyx sub anthesi 5 mm longus demum 6.5 mm longus basi obsolete gibbosus, profunde laciniatus, laciniis lanceolatis acuminatis sub anthesi 3–4 mm post anthesin 4–5 mm longis. Corolla 5.5 mm longa. Vexillum 5.5 mm longum. Alae 4.5 mm longae. Carina 4.5 mm longa. Legumen ovato-oblongum circ. 10 mm longum 5 mm latum apice acuminatum basi sessile glanduloso-hirtum. Semen ovato-cordatum 4.5 mm longum 4 mm latum apice acutum basi cordatum irregulariter tuberculatum.

Between Sarobi and Kabul, 2800 m (Jun. 18, 1955 K. Yamashita and S. Kitamura)—Typus in Herb. Univ. Kyoto.

Distr. Afghanistan

This species is related to *Cicer arietinum*, the cultivated chick pea, but easily distinguished from it by the peduncle with a very long awn. The leaflets are 5, not 7–15. The legumes and the seeds are very small. This is interesting as a wild plant related to cultivated chick pea. The specific name is dedicated to Prof. Dr. K. Yamashita, a member of our expedition who gave the writer many facilities in this trip from Kabul to Jalalabad.

Colutea gracilis Freyn et Sint. in Bull. Herb. Boiss. sér. II, IV : 46 (1904).—Schneider, Handb. Laubholz. II : 91, Fig. 56 i–k, Fig. 57 a–e (1907).—Shaparenko in Fl. URSS XI : 321, Tab. XXII–6 (1945).—Rechinger f., l. c. 24 (1957).

Distr. Afghanistan, Gorn.–Turkm.

The occurrence is not ascertained by a floriferous specimen.

Colutea nepalensis Sims in Bot. Mag. t. 2622 (1826).—Schneider, Ill. Handb. Laubh. II : 91, Fig. 56–f, 55 r–u (1907).

C. arborescens var. *nepalensis* Baker, F. B. I. II : 103.

Distr. Afghanistan, Himalaya : from Kashmir to Nepal, Tibet.

Colutea Paulsenii Freyn in Bull. Herb. Boiss. sér. II, IV : 47 (1904).—Shaparenko in Fl. URSS XI : 322, Tab. XXII–7 (1945).—Rech. f., l. c. 24 (1957).

Between Doab and Pulikhumri (June 26, 1955 S. K.).

Distr. Pamir, Afghanistan.

Gilli reported *C. rostrata* Gilli, closely related to this species in Fedde, Rep. Bd. LIX : 196 (1957) from Afghanistan.

Colutea persica Boiss. var. ***Buhsei*** Boiss., F. O. II : 196 (1872).—Schneider, Ill. Handb. Laubh. II. 90.—Rechinger f., l. c. 24 (1957).

Colutea Buhsei (Boiss.) Sharp. in Fl. URSS XI : 320, Tab. XXII–1 (1945).

Distr. Afghanistan, Iran, Gorn.–Turkm.

Crotalaria Burhia Hanilton ex Baker in London Journ. XI : 474 (1843).—Boiss., F. O. II : 26.—Baker, F. B. I. II : 66.

var. **tomentosa** Boiss., F. O. II : 26.

Distr. sp. Afghanistan, Pakistan.

Crotalaria medicaginea Lam., Encycl. II : 201 (1786).—Boiss., F. O. II : 26.—Baker, F. B. I. II : 81.

Distr. Afghanistan, Himalaya : Kashmir, India, Burma, Malaya, China, Australia.

Dalbergia Sisso Roxb., Hort. Beng. 53 (1814).—Baker, F. B. I. II : 231.—Rech. f., l. c. 200 (1957).

Jalalabad, Street tree (June 17, 1955 S. K.).

Distr. India, Himalayas, Pakistan.

Desmodium tiliaefolium G. Don, Gen. Syst. II : 297 (1832).—Baker, F. B. I. II : 168.—Kitamura, Fauna and Flora of Nepal Himalaya 165 (1955).—Rech. f., l. c. 198. Bot. Mag. t 2867.

Distr. Afghanistan (Nuristan), Pakistan, Himalayas, Burma, China : Yunnan, Szechuan.

Ebenus stellata Boiss., Diag. Ser. I, II : 100 (1843), F. O. II : 557.—Aitch., J. L. S. XVIII : 48.—Baker, F. B. I. II : 140.—Rech. f., l. c. 198.

E. tragacanthoides J. et Sp., Ill. Or. t. 254.

Distr. Iran, Afghanistan, Pakistan.

Eversmannia subspinosa (Fischer) B. Fedtsch. in Tr. B. S. XXIV : 173 (1905).—Gorschkova in Fl. URSS XIII : 258 (1948).

Eversmannia hedysaroides Bunge in Goebel, Reis. II : 267, t. 6 (1838).—Aitchison, T. L. S. n. III : 56.

Distr. Afghanistan, Iran, Central Asia, E. Europe.

Genista tinctoria L., Sp. Pl. 710 (1753).

Kabul, Dal-ul-Aman (July 18, 1955 S. K.)—cultivated.

Distr. A native of Europe and Caucasus.

Gleditschia triacanthos L., Sp. Pl. 1056 (1753).

Pulikhumri cultivated (July 5, 1955 S. K.)—Fr.

Distr. A native of North America.

Glycine Max Merrill, Interpret. Herb. Amb. 274 (1917).—Kitamura in Land and Crops of Nepal Himalaya 119 (1956).

The seeds were bought at Voma, Nuristan (July 30, 1955). Native name Karol.

Distr. A native of North China.

Seeds oblong 6-9 mm long 4-5 mm broad, somewhat depressed purple brown, yellow white or black.

Glycyrrhiza aspera Pallas, Reise I : 499, f. 3 (1771).—Grig. et Vassil. in Fl. URSS XIII : 234 (1948).—Rech. f., l. c. 183 (1957).

G. asperrima L. f., Suppl. 330 (1781).—Boiss., F. O. II : 203.

Distr. E. Europe, Caucasus, Central Asia, Iran, Afghanistan, Dz.-Kashg.

Glycyrrhiza glabra L., Sp. Pl. 742 (1753).—Boiss., F. O. II : 202.—Grig. et

Vassil. in Fl. URSS XIII: 233 (1948).—Rechinger f., l. c. 183.

Distr. Europe, Caucasus, W. Siberia, Central Asia, Asia Minor, Arm.-Kurd., Iran, Afghanistan.

var. **glandulifera** (Reg. et Herd.) Boiss., F. O. II: 202.—Rech. f., l. c. 183.

Between Kabul and Sarobi (June 15, 1955 S. K.), Kabul, Tomb of Baber (July 14, 1955 S. K.).

Distr. Greece, Syria, Iran, Central Asia, Afghanistan.

Glycyrrhiza uralensis Fischer in DC., Prodr. II: 258 (1825).—Grig. et Vassil. in Fl. URSS XIII: 236 (1948).—Rech. f., Symb. Afgh. III: 184 (1957).

Distr. Afghanistan, Pakistan, Siberia, Central Asia, Dz.-Kashg., Mong., Manch., North China.

Goebelia alopecuroides (L.) Bunge ex Boiss., F. O. II: 628.—Rech. f., l. c. 9 (1957).

Sophora Jauberti Spach, Ill. Or. t. 330.

Sophora alopecuroides L., Sp. Pl. 373 (1753).—Baker, F. B. I. II: 250.—Aitch., J. L. S. XVIII: 50.—Vassil. in Fl. URSS XI: 25.

Distr. Greece, Asia Minor, E. Europe, Armenia, Caucasus, Central Asia, Afghanistan, Altai, Irt., Dz.-Kashg., Pakistan.

var. **tomentosa** Boiss., F. O. II: 629.—Rech. f., l. c. (1957).

Kandahar (June 8, 1955 S. K.), between Siyagird and Charikar (July 11, 1955 S. K.), Charikar (June 23, 1955 S. K.), Doab (June 24, 1955 S. K.), (July 10, 1955 S. K.).

Distr. Mesopotamia, Iran, Afghanistan, Pakistan: Quetta (May 26, 1955 S. K.).

Goebelia pachycarpa (C. A. Mey.) Bunge ex Boiss., F. O. II: 629.—Aitch., T. L. S. n. III: 60.—Rech. f., l. c. 9 (1957).

Sophora pachycarpa C. A. Mey., Index Sem. Horti Petrop. IX: 89 (1843).—Vassil. in Fl. URSS XI: 27, Tab. 2-3 (1945).

Halimodendron Halodendron (Pall.) Voss. in Vilm. Ill. Blumeng., 3 Auf. 215 (1896).—Gorschkova in Fl. URSS XI: 323, Tab. XX-2 (1949).—Rech. f., Symb. Afgh. III: 24 (1957).

Halimodendron argenteum DC., Prodr. II: 269 (1825).—Boiss., F. O. II: 198.

Robinia Halodendron Pall., Reise durch versch. Prov. des russ. II. Anh. 471, tab. W. (1770).—L. f., Suppl. 330 (1781).—Pallas, Fl. Ross. t. 46.

Distr. Niz.-Don., Caucasus, Iran, Central Asia, Irt., Mongolia, Afghanistan.

Hedysarum (Criniferae) **bucharicum** B. Fedtsch., Hedys. 322 (1902), Fl. URSS XIII: 318 (1948).—Rechinger f., l. c. 184 (1957).

Distr. Pam.-Al., Afghanistan.

Hedysarum (Criniferae) **micropterum** Bunge ex Boiss., F. O. II: 523.—Rech. f., l. c. 185 (1957).

Distr. Afghanistan, Iran.

Hedysarum (Criniferae) **purpureopilosum** Kitamura in Acta Phytotax. Geobot.

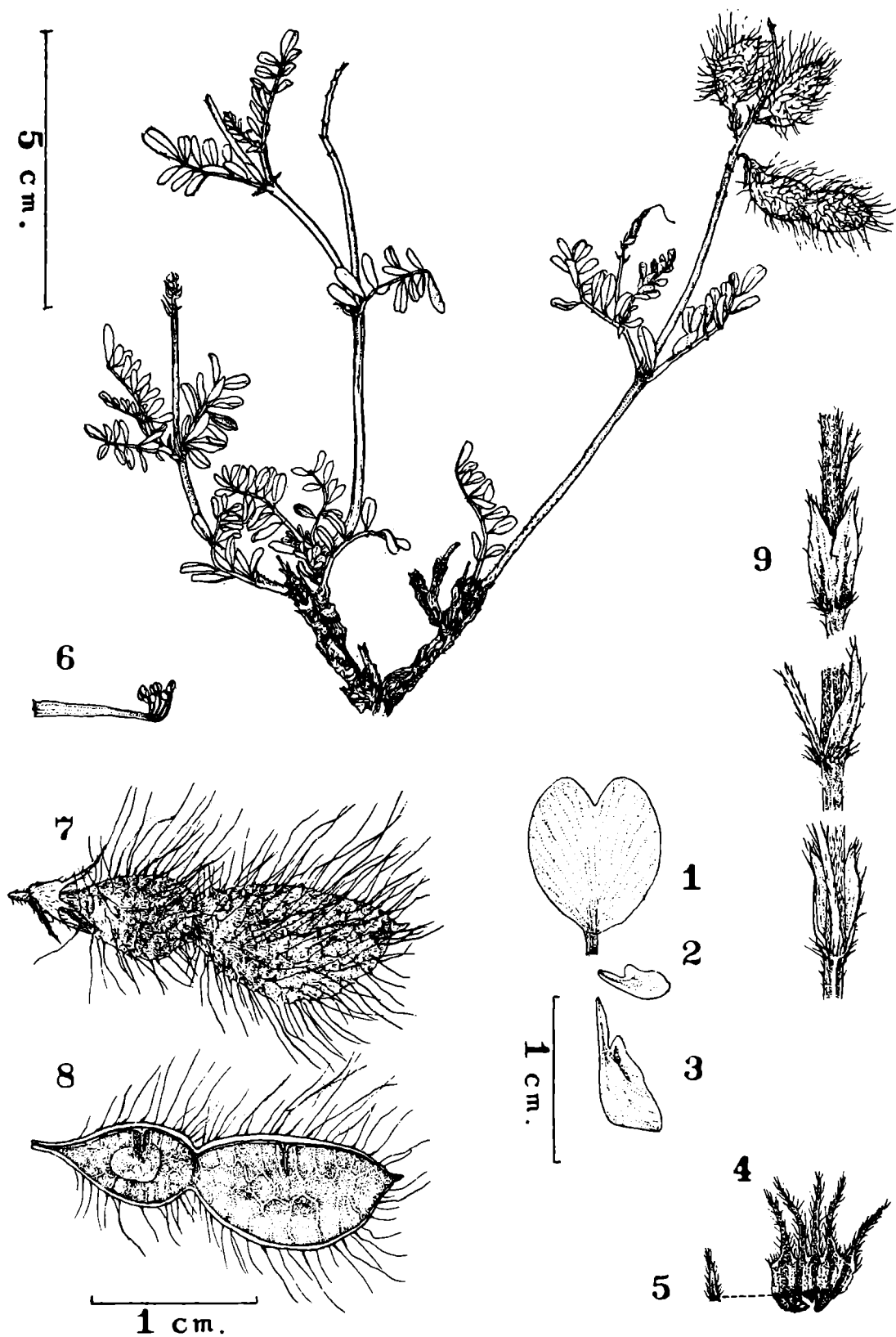


Fig. 73. *Hedysarum purpureopilosum* Kitam.: 1 Standard, 2 Wing, 3 Keel, 4 Calyx, 5 Bracteole, 6 Stamen, 7 Legume, 8 Vertical section of Legume, 9 Stipules. (Shishigal near Kabul).

XVII: 137. Fig. 73.

Species *Hedysaro bucharico* affinis a quo foliolis 7–10 jugis minoribus, corolla 7 mm longa (nec 10–12 mm longa) differt. Ab *H. microptero* foliolis 7–10 jugis (nec 3–5 jugis), carina vexillo aequilonga divergit.

Rhizoma perenne obliquum basibus foliorum vetustorum atro-squamatum, 2 mm diametro ad collum ramosum. Caulis caespitosus erectus vel ascendens 10–15 cm altus angulato-striatus adpresse et minute albopilosus parce dichotome ramosus, ramis ascendentibus. Folia inferiora sub anthesi viva quam caulina media minora, caulina media 2.5–5 cm longa imparipinnata, foliola 7–10 juga, oblonga vel obovato-oblonga 6–9 mm longa apice truncata vel emarginata basi cuneata utrinque praecipue subtus dense adpresse albo-pilosa, petiolulis 0.5 mm longis, stipulis in unam oppositifoliam connatis 3–4 mm longis membranaceis pilosis apice acuminatis bifidis. Racemi 1.5–6 cm longi 13–35 flori, adpresse albopilosi, bracteis brunneis lineari-lanceolatis 3 mm longis, pedicellis 1.5 mm longis. Calyx tubo late campanulato 1.5 mm longo 2.5 mm diametro brunneo albo-piloso, lobis triangulari-linearibus 5 mm longis, bracteolis unis linearibus 1 mm longis. Vexillum 9 mm longum 6.5 mm latum apice bilobum basi breviter unguiculatum. Carina 7.5 mm longa antice rectangula. Alae 4 mm longae. Stylus gracilis apice glaber. Legumen compressum stipitatum, stipite 2 mm longo, 11 mm longum 7 mm latum uniloculare vel 22 mm longum 7 mm latum, medio constrictum articulatum biloculare, facie adpresse minute pilosum transverse interdum subreticulatim costulatum, secus costas pilis purpurascens 6–8 mm longis dense pilosum, loculis uniovulatis.

Shishigar (June 11, 1955 S. Kitamura)—Typus in Herb. Univ. Kyoto.

Distr. Afghanistan.

Hedysarum (Criniferae) ***Wrightianum*** Aitch. et Baker, T. L. S. n. III: 57 (1888).

Distr. Afghanistan (NW).

Hedysarum (Multicaulia) ***astragaloides*** Benth. ex Baker, F. B. I. II: 146.—Aitch., J. L. S. XVIII: 49.

Distr. Pakistan (Kuram), Himalaya: Kishtwar.

Hedysarum (Multicaulia) ***Maitlandianum*** Aitch. et Baker, T. L. S. n. III: 57 (1888).

Distr. Afghanistan (NW).

Hedysarum (Multicaulia) ***malurense*** Rech. f., Symb. Afgh. III, 184, Fig. 220, 221 (1957).

Distr. Afghanistan (NW).

Hedysarum (Multicaulia) ***praticolum*** Rech. f., Symb. Afgh. III: 188, Fig. 224, 225 (1957).

Distr. Afghanistan (Nuristan).

Hedysarum (Multicaulia) ***sausakense*** Rech. f., et Kōie, Symb. Afgh. III: 190,

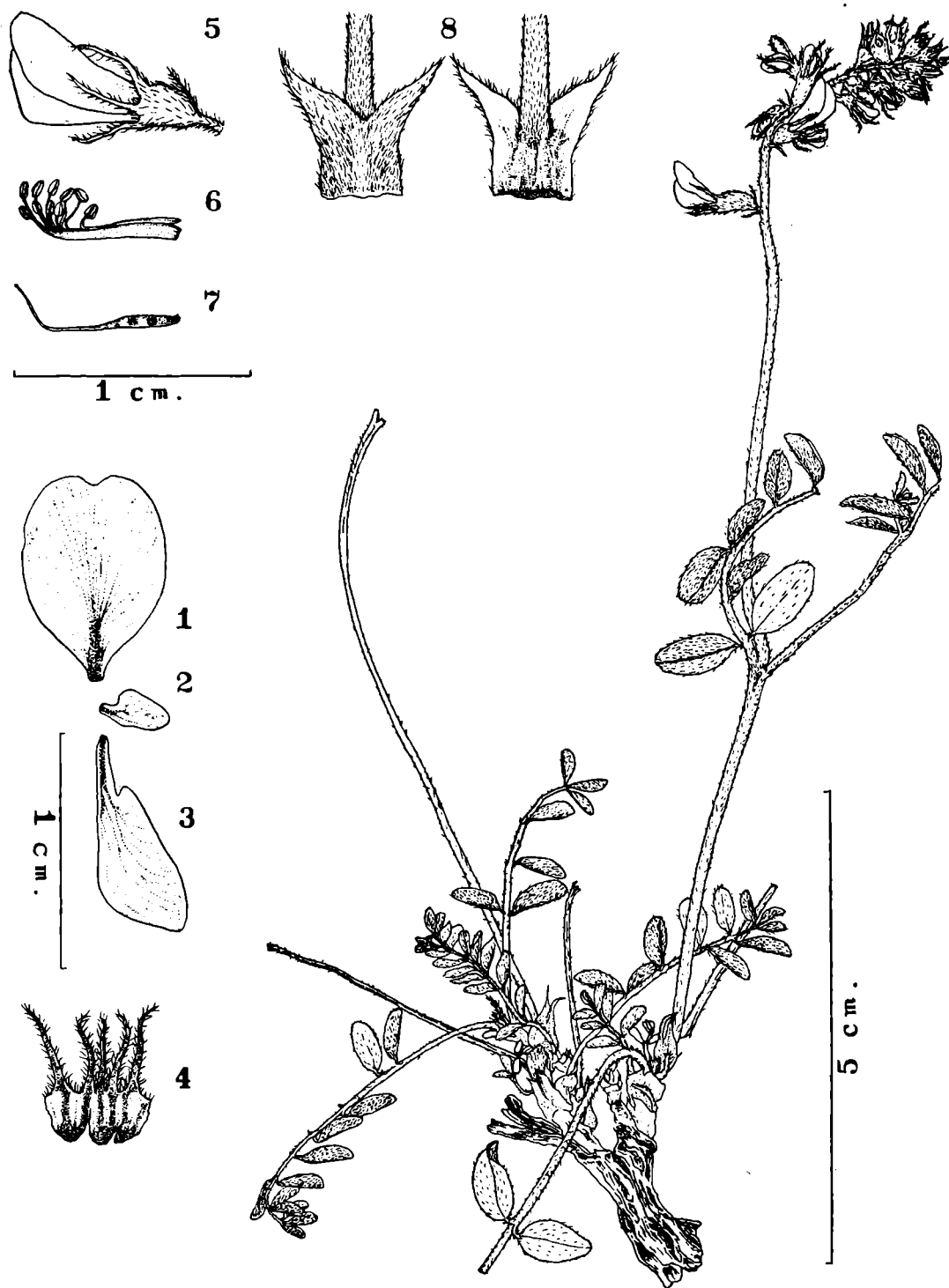


Fig. 74. *Hedysarum sericatum* Kitam.: 1 Standard, 2 Wing, 3 Keel, 4 Calyx, 5 Flower, 6 Stamens, 7 Pistil, 8 Stipules. (Shishigar near Kabul).

Fig. 226, 227 (1957).

Distr. Afghanistan (NW).

Hedysarum (Multicaulia) **sericatum** Kitamura in Acta Phytotax. Geobot. XVII: 138. Fig. 74,

Ab Hedysaro Volkii foliis 7–10 jugis caule elongato, alis corollae brevissimis differt.

Rhizoma obliquum vel repens, fuscescens 3–5 mm diametro. Caulis solitarius vel binus, erectus vel ascendens sub anthesi 9–12 cm altus sericeo-pilosus inferne circ. 1 mm diametro ad medium dichotome ramosus, ramis ascendentibus. Folia caulina inferiora quam caulina media majora 2.5–6 cm longa imparipinnata dense sericea, foliola 9–11 juga ovato-oblonga vel oblonga 6–7.5 mm longa 4.5–5 mm lata apice obtusa basi rotundata saepe conduplicata crassiuscula utrinque sericea, petiolulis 0.5 mm longis, stipulis 45 mm longis apice bifidis, folia caulina media 1.5–2.5 cm longa, foliola 5–7 juga. Racemi sub anthesi 2–3 cm longi, multiflori, bracteis linearibus membranaceis 2 mm longis. Calyx albo-villosus 6.5 mm longus, tubo campanulato 2 mm longo, bracteola lineari 1.5 mm longa, pedicellis 0.8 mm longis, lobis lanceolatis 4.5 mm longis. Vexillum late ellipticum 8.5 mm longum apice emarginatum basi breviter unguiculatum. Carina 9 mm longa antice rectangula. Alae 3 mm longae. Ovarium sessile glabrum bi-ovulatum. Stylus glaber.

Shishigar (June 11, 1955 S. Kitamura)—Typus in Herb. Univ. Kyoto.

Distr. Afghanistan.

Hedysarum (Subacaulia) **Brahuicum** Boiss., F. O. II: 516 (1872).

Distr. Afghanistan.

Hedysarum (Subacaulia) **minjanense** Rech. f., Symb. Afgh. III: 185, Fig. 222, 223. (1957).

Distr. Afghanistan (Nuristan).

Hedysarum (Subacaulia) **Volkii** Rechinger f., Symb. Afgh. III: 191, Fig. 228, 229 (1957).

Distr. Afghanistan (C).

Indigofera anabaptista Steud., Nom. 2 ed. 805 (1840).—Baker, F. B. I. II: 102.

I. ornithopodioides Hochst. et Steud. in Schimp. Hb. Arab. no 769 ex Jaub. et Spach, Ill. Orient. t. 480 (1853–7).—Boiss., F. O. II: 188.

Distr. North Africa, Arabia, Afghanistan, Pakistan.

Indigofera Gerardiana Wall. ex Baker, F. B. I. II: 100 (1876).—Aitch., J. L. S. XVIII: 43.—Rech. f., Symb. Afgh. III: 22, Fig. 13.

Nuristan: Between Seprigal and Voma (July 29, 1955 S. K.).

Distr. Afghanistan (Nuristan), Pakistan, Himalaya: from Kashmir to Kumaon.

Indigofera heterantha Wall. ex Brandis, For. Fl. 135 (1874).—Rech. f., Symb. Afgh. III: 23 (1957).

Distr. Afghanistan (Nuristan), Pakistan, Himalaya: from Kashmir to Bhutan, Khasia.

Indigofera linifolia Retz., Obs. IV: 29 (1786), VI: 33, t. 2 (1791).—Boiss., F. O. II: 188.—Baker, F. B. I. II: 92.—Kitamura, Fauna and Flora of Nepal Himalaya 166 (1955).

Distr. Nubia, Abyssinia, Afghanistan, Pakistan, Himalaya, India, Malaya, N. Australia.

Indigofera tribuloides Boiss., F. O. II: 189 (1872).

Distr. Afghanistan.

Indigofera viscosa Lamarck, Encycl. III: 247 (1789).—Boiss., F. O. II: 189.—Baker, F. B. I. II: 95.—Wight, Ic. t. 404.

Distr. Afghanistan, Trop. Africa, India, Burma, Malay Islands, N. Australia.

Kerstanianuristanica Rech. f., Symb. Afgh. III: 19, Fig. 8, 9 (1957).

Distr. Afghanistan (Nuristan).

Lagonychium farctum (Banks et Sol.) Bobr., Fl. URSS XI: 14, Tab. I-1 (1945).—Rech. f., Symb. Afgh. III: 7 (1957).

Mimosa farcta Banks et Sol. in Al. Russel Nat. Hist. Aleppo ed. 2, II: 266 (1794).

Prosopis Stephaniana (Willd.) Kunth. ex Spreng., Syst. II: 326 (1825).—Boiss., F. O. II: 633.—Aitch., T. L. S. n. III: 60.

15 km east from Kandahar (June 6, 1955 S. K.), between Doab and Pulikhumri (June 26, 1955 S. K.), between Haibak and Mazarisharif (June 27, 1955 S. K.).

Distr. Afghanistan (ubiquitous), Egypt, Arabia, Palestine, Syria, Mesopotamia, Iran, Caucasus, Central Asia.

Lathyrus Apaca L., Sp. Pl. 729 (1753).—Boiss., F. O. II: 602.—Aitch., J. L. S. XVIII: 50, T. L. S. n. III: 59.—Baker, F. B. I. II: 179.—Fedtsch., Fl. URSS XIII: 480 (1948).—Rech. f., l. c. 206.

Charikar (June 23, 1955 S. K.), Pagman (July 15, 1955 S. K.).

Distr. Europe, North Africa, Iran, Afghanistan, Pakistan, India, Himalaya: Kashmir, Kumaon.

Lathyrus humilis Fischer ex Seringe, in DC., Prodr. II: 278 (1825).—B. Fedtsch., Fl. URSS XIII: 499 (1948).—Rech. f., Symb. Afgh. III: 206 (1957).

L. altaicus var. *humilis* Ledeb., Ic. Fl. Ross. t. 53.

Distr. E. Europe, Siberia, Daln.-Vostok, Central Asia, Manchuria, Afghanistan, W. Himalaya.

Lathyrus inconspicuus L., Sp. Pl. 730 (1753).—Baker, F. B. I. II: 180.—B. Fedtsch., Fl. URSS XIII: 498 (1948).—Rech. f., l. c. 206 (1957).

var. **stans** Vis., Fl. Dalm. III: 328 (1852).—Rechinger f., l. c. 206.

Lathyrus erectus Lag., Gen. et Sp. Nov. 22 (1816).—Boiss., F. O. II: 613.

Distr. sp. Afghanistan, Pakistan, Asia Minor, Armenia, Mesopotamia, Iran, Caucasus, Syr-Dar., Pam.-Al., Gorn.-Turkm., Himalaya: Kashmir.

Lathyrus pratensis L., Sp. Pl. 733 (1753).—Boiss., F. O. II: 615.—Baker, F. B. I. II: 180.—B. Fedtsch., l. c. 501 (1948).—Rech. f., Symb. Afgh. III: 206 (1957).

Pagman (July 15, 1955 S. K.), Nuristan: Between Kushimaicot and Pushuki (Aug. 3, 1955 S. K.), between Kushimaicot and Chatrass (Aug. 2, 1955 S. K.).

Distr. Europe, North Africa, Asia Minor, Iran, Afghanistan, Pakistan, W. Himalaya, Central Asia (common), Siberia, Mongolia

Lathyrus sativus L., Sp. Pl. 730 (1753).—Boiss., F. O. II: 606.—B. Fedtsch., Fl. URSS XIII: 485.—Baker, F. B. I. II: 179.—Rech. f., Symb. Afgh. III: 206 (1957).

Charikar (June 23, 1955 S. K.).

β. **stenophyllus** Boiss., l. c. 607.

Distr. sp. Europe, North Africa, Caucasus, Iran, Pakistan, Afghanistan, Dahuria, Central Asia (common), Dz.-Kashg., India, Himalaya: Kumaon.

Lathyrus sphaericus Retz., Obs. III: 39 (1785).—Boiss., F. O. II: 613.—Aitch., J. L. S. XVIII: 50.—B. Fedtsch., Fl. URSS XIII: 497.—Baker, F. B. I. II: 180.—Reich., Ic. Germ. XXII t. 222.

Distr. Europe, Caucasus, Asia Minor, Iran, Afghanistan, Pakistan, Central Asia, Himalaya: Eastwards to Kumaon.

Lens culinaris Medik., Vorles. Churpf. Phys. Ges. II: 361 (1787).—B. Fedtsch., Fl. URSS XIII: 418.—Rechinger f., Symb. Afgh. III: 206 (1957).

Ervum Lens L., Sp. Pl. 738 (1753).—Boiss., F. O. II: 598.

Distr. Widely cultivated in Western Asia and Europe.

Lens orientalis (Boiss.) Schmalh., Fl. I: 297 (1895).—B. Fedtsch., l. c. 477 (1948).

Ervum orientale Boiss., Diag. Pl. Or. Ser. I, IX: 115 (1849), F. O. II: 598.

Distr. Syria, Palestine, Asia Minor, Caucasus, Iran, Afghanistan, Central Asia (common).

Lespedeza cuneata G. Don, Gen. Syst. II: 307 (1832).

Lespedeza sericea Miquel in Ann. Mus. Lugd. Bat. III: 49 (1867).—Baker, F. B. I. II: 142.—Aitch., J. L. S. XVIII: 49.

Distr. Pakistan (Kuram), Himalaya: from Kashmir to Assam, China, Japan.

Lespedeza juncea Pers., Ench. II: 318 (1807).—Baker, F. B. I. II: 142.

Hedysarum junceum L., Sp. Pl. 2 ed. 1053 (1763).

Lespedeza variegata Camb. in Jacquem., Voy. Bot. 42, t. 50 (1844).

Lespedeza nuristanica Rech. f., Symb. Afgh. III: 199, Fig. 236 (1957).

Eastern Prov.: Kandai near the entrance of Nuristan (July 27, 1955 S. Kitamura).

Distr. Afghanistan (E), India, Himalaya: Kashmir, Kunawar, Southern China.

The calyx lobes have three nerves.

Lotus corniculatus L., Sp. Pl. 775 (1753).—Boiss., F. O. II: 165.—Kuprianova in Fl. URSS XI: 291, Tab. XIX—2 (1945).—Rech. f., l. c. 18 (1957).

Shibar Pass (June 24, 1955 S. K.), Zerni (Sept. 2, 1955 T. Umesao).

Distr. Afghanistan, Caucasus, Gorn.-Turkm., westwards to Europe.

var. **japonicus** Regel, Index Sem. Horti Petrop. 23 (1864).—Kitamura, Fauna and Flora of Nepal Himalaya 166 (1955).

L. corniculatus sensu Baker, F. B. I. II: 91 pro parte.

Doab (June 24, 1955 S. K.), Nuristan: Between Seprigal and Voma (July 29, 1955 S. K.).

Distr. From the eastern part of Afghanistan eastwards to Japan.

The var. *japonica* is characterized by the glabrous leaflets.

subsp. **tenuis** (Kit.) Briquet ex Rech. f., Symb. Afgh. III: 19 (1957).

Lotus tenuis Waldst. et Kit. ex Willd., Enum. Horti Berol. 797 (1809).—Kuprianova in Fl. URSS XI: 292 (1945).

Lotus tenuifolius Reich., Fl. Germ. exc. 506 (1832), Ic. XXII: t. 2181 fig. 3, 4, 1-5.—Boiss., F. O. II: 166.

Between Siyagird and Charikar (July 11, 1955 S. K.).

Distr. Europe, North Africa, Asia Minor, Iran, Gorn.-Turkm., Pakistan, Afghanistan, Caucasus, Sungaria.

Medicago hispida Gaertn. var. **apiculata** (Willd.) Burnat, Fl. Alp. Maritimes II: 106 (1896).—Hegi, Ill. Fl. IV₃: 1271, Fig. 1380a-e (1924).—Rech. f., Symb. Afgh. III: 16 (1957).

var. **denticulata** (Willd.) Burnat, l. c. 107.—Hegi, l. c. Fig. 1380 h, i.

Medicago denticulata Willd., Sp. Pl. III: 1414 (1800).—Boiss., F. O. II: 102.—Grossheim in Fl. URSS XI: 168, Tab. XI-14 (1945).

Distr. sp. Mediterranean Region, Asia Minor, Central Asia, Afghanistan. Sometimes naturalized in other parts of the world.

Medicago lupulina L., Sp. Pl. 779 (1753).—Boiss., F. O. II: 105.—Aitch., J. L. S. XVIII: 43.—Bornm. in Engler, Bot. Jahrb. LXVI: 224.—Gross. in Fl. URSS XI: 134, Tab. X-2 (1945).—Rechinger f., l. c. 16.

Dal-ul-Aman (July 18, 1955 S. K.), Charikar (June 23, 1955 S. K.).

var. **glandulosa** Mertens et Koch, Deutsch. Fl. V: 324 (1839).—Rechinger f., l. c. 16.

Nuristan (Rech. f.).

var. **perennans** Hal. ex Hegi, Ill. Fl. IV₃: 1256.—Gross., Fl. Kavk. II: 260 (1930).—Rechinger f., l. c.

Distr. sp. Eurasia, North Africa.

Medicago minima (L.) Desr. in Lam., Encycl. III: 636 (1789).—Boiss., F. O. II: 103.—Baker, F. B. I. II: 91.—Hegi, Ill. Fl. IV₃: 1273, Fig. 1381, Tab. 161, Fig. 5.—Gross. in Fl. URSS XI: 174, Tab. XI-16 (1945).—Rech. f., l. c.

Distr. Europe, North Africa, Asia Minor, Caucasus, Central Asia, Afghanistan, Kashmir.

Medicago orbicularis All., Fl. Ped. I: 314 (1785).—Baker, F. B. I. II: 90.—Hegi, Ill. Fl. IV₃: 1267, Fig. 1377 (1924).—Gross. in Fl. URSS XI: 161, Tab. X—7 (1945).—Rech. f., l. c. 16.

Kandahar (Aug. 5, 1955 S. K.).

Distr. Mediterranean Region, Caucasus, Syr-Dar., Pam.-Al., Gorn.-Turkm., Mesopotamia, Iran, Afghanistan, Kashmir.

Medicago radiata L., Sp. Pl. 778.—Hegi, Ill. Fl. IV₃: 1251 Fig. 130.—Rech. f., l. c. 16.

Trigonella radiata Boiss., F. O. II: 90.—Gross. in Fl. URSS XI: 123, Tab. IX—81 (1945).

Distr. Caucasus, Asia Minor, Syria, Iran, Gorn.-Turkm., Syr-Dar., Tianshan, Afghanistan.

Medicago rigidula (L.) Desr. in Lam., Encycl. III: 634 (1789).—Hegi, Ill. Fl. IV₃: 1268, Fig. 1378c, d (1924).—Gross. in Fl. URSS XI: 164, Tab. XI—12 (1945).—Rech. f., l. c. 16 (1957).

Medicago Gerardi Willd., Sp. Pl. III: 1415 (1800).—Boiss., F. O. II: 100.—Aitch., T. L. S. n. III: 48.

Distr. Mediterranean Region, Caucasus, Iran, Afghanistan, Central Asia.

Medicago sativa L., Sp. Pl. 778 (1753).—Boiss., F. O. II: 94.—Aitch., T. L. S. n. III: 48.—Gross. in Fl. URSS XI: 148, Tab. X—14 (1945).

Kandahar (June 8, 1955 S. K.), Zerni (Sept. 2, 1955 T. Umesao), Doab (June 24, 1955 S. K.).

Distr. Europe, North Africa, Asia Minor, Caucasus, Central Asia, Iran, Afghanistan, Pakistan, W. Siberia: Verh.—Tob., Ussuri.

In China *M. sativa* was introduced about 2000 years ago from Central Asia. The Afghan plants were distinguished as *M. afghanica* (Bord.) Vass. in Bot. Journ. SSSR XXXI, 3: 28 (1946), in Fl. et Syst. VIII: 96, fig. 15—1 (1949).

Melilotus albus Medikus, Vorles. Churpf. Ok. Ges. II: 382 (1787) nomen tantum.—Desr. in Lam., Encycl. IV: 63 (1796).—Boiss., F. O. II: 109.—Aitch., J. L. S. XVIII: 43.—Bobrov in Fl. URSS XI: 181, Tab. XII—8 (1945).

var. **parviflora** Boiss., l. c. 110.—Rech. f., Symb. Afgh. III: 17.

Between Haibak and Mazarisharif (June 27, 1955 S. K.).

Distr. Europe, Asia Minor, Caucasus, Iran, Afghanistan, Central Asia, Siberia, Pakistan, India, Himalaya, China.

Melilotus altissimus Thuill., Fl. Paris éd. 2, 378 (1799).—Boiss., F. O. II: 109.—Bornm. in Engler, Bot. Jahrb. LXVI: 224 (1934).—Bobrov in Fl. URSS XI: 184, Tab. XII—2 (1945).

Distr. Europe, Alt., Afghanistan. (in garden of Kabul, identification without fruits).

Melilotus indicus (L.) All., Fl. Ped. I: 308 (1785).—Bobrov in Fl. URSS XI: 189, Tab. XII—4 (1945).—Rech. f., l. c. 17.

Melilotus parviflora Desf., Fl. Atl. II: 192 (1800).—Boiss., F. O. II: 108.—Baker, F. B. I. II: 89.

Kandahar (June 6, 1955 S. K.).

Distr. Mediterranean Reg., Caucasus, Central Asia, Iran, Afghanistan, Pakistan, India, China.

Melilotus officinalis (L.) Medikus Vorles. Churpf. Ök. Ges. II: 382 (1787) nomen tantum.—Desr. in Lam., Encycl. IV: 63 (1796).—Aitch., J. L. S. XVIII: 43.—Rech. f., l. c. 17.—Bobrov in Fl. URSS XI: 181, Tab. XII-1 (1945).

var. **micranthus** O. E. Schulz in Engler, Bot. Jahrb. XXIX: 702 (1901).—Rech. f., l. c.

Bulola (June 25, 1955 S. K.).

Distr. sp. Europe, Asia Minor, Caucasus, Central Asia, Arm.-Kurd., Siberia, Iran, Afghanistan, Pakistan, Western Himalaya, Tibet.

Melilotus suaveolens Ledeb., Index Sem. Horti Dorp. Suppl. 5 (1824).—O. E. Schulz in Engler, Bot. Jahrb. XXIX: 697 (1901).—Bobrov in Fl. URSS XI: 180 (1949).—Rechinger f., l. c. 17.

Distr. Afghanistan, Siberia, Central Asia, Dz.-Kashg., Mongolia, China, Japan, Indo-China.

Meristotropis xanthioides Vassil., Fl. URSS XIII: 241 (1948).—Rech. f., l. c. 184.

Glycyrrhiza triphylla Fischer et Mey. sensu Boiss., F. O. II: 203 pro parte.—Aitch., J. L. S. n. III: 56.

Between Kunduz and Pulikhumri (July 8, 1955 S. K.).

Distr. Gorn.-Turkm., Iran, Afghanistan.

The plants were growing among gravels, and were very fragrant.

Onobrychis afghanica Širj. et Rech. f. in Annalen des Naturhist. Mus. Wien 58: 75 (1951), Symb. Afgh. III: 193, Fig. 230 (1957).

Distr. Afghanistan (Pagman).

var. **Codringtonii** Širj. et Rech. f., l. c. 75 (1951), l. c. 194, Fig. 231 (1957).

Distr. Afghanistan (C).

Onobrychis Arnacantha Bunge ex Boiss., F. O. II: 538.—Rechinger f., l. c. 194 (1957).

Distr. Iran, Afghanistan (W).

Onobrychis Aucheri Boiss., Diag. Ser. I, II: 94 (1843), F. O. II: 544.—Aitch., T. L. S. n. 111: 58.

Distr. Iran, Afghanistan (W).

Onobrychis caloptera Aitch. et Baker, T. L. S. n. III: 58.

Distr. Afghanistan (W).

Onobrychis cornuta (L.) Desv., Journ. Bot I: 81 (1814).—Boiss., F. O. II: 537.—Aitch., J. L. S. XVIII: 48.—Gross. in Fl. URSS XIII: 325.—Rech. f., l. c.

194 (1957).

Distr. Asia Minor, Caucasus, Iran, Afghanistan, Pakistan, Central Asia: Gorn.-Turkm., Pam.-Al., Tianshan.

Onobrychis dasycephala Baker, J. L. S. XVIII: 48.—Rech. f., l. c. 194, Fig. 232 (1957).

Distr. Afghanistan.

Onobrychis eubrychidea Boiss., F. O. II: 546 (1872).—Rechinger f., l. c. 195 (1957).

Distr. Afghanistan.

Onobrychis grandis Lipsky var. **Edelbergii** Širj. et Rech. f., Symb. Afgh. III: 195.

Distr. var. Afghanistan (C).

Onobrychis laxiflora Baker, J. L. S. XIX: 159, pl. VI (1882).—Rech., f., l. c. 195 (1957).

Distr. Afghanistan.

f. **schugnanica** (B. Fedtsch.) Širj. ex Rech. f., l. c. 196 (1957).

O. schugnanica B. Fedtsch. in Tr. Bot. Muz. An. I: 129 (1902).

Distr. Afghanistan, Pam.-Al.

Onobrychis macrorhiza Rech. f., Symb. Afgh. III: 196, Fig. 233, 234 (1957).

Distr. Afghanistan (E).

Onobrychis megalobotrys Aitch. et Baker, T. L. S. n. III: 58 (1888).

Distr. Afghanistan (W).

Onobrychis micrantha Schrenk in Fischer et Mey., Enum. Pl. Nov. I: 85 (1841).—Aitch., T. L. S. n. III: 57.—Gross. in Fl. URSS XIII: 328, Tab. XVI-5 (1948).—Rech. f., l. c. (1957).

Between Pulikhunri and Haibak (June 27, 1955 S. K.).

Distr. Central Asia (common), Afghanistan.

Onobrychis microptera Baker, J. L. S. XVIII: 48 (1880).—Rech. f., Symb. Afgh. III: 197 (1957).

Lataband, Mullaomur (June 15, 1955 S. K.), Kabul, Tomb of Baber (July 14, 1955 S. K.), Shishigar (June 10, 1955 S. K.).

Distr. Afghanistan.

Onobrychis sauzakensis Širj. et Rech. f., Symb. Afgh. III: 197, Fig. 235 (1957).

Distr. Afghanistan.

Onobrychis spinosissima Baker, J. L. S. XVIII: 49 (1880).

Distr. Afghanistan (Kuram).

Onobrychis taverniaefolia Stocks ex Boiss., F. O. II: 545 (1872).—Aitch., T. L. S. n. III: 58.—Rech. f., l. c. 198 (1957).

Distr. Afghanistan.

Onobrychis teheranica Bornm. in Bull. Herb. Boiss. sér. II, V: 846 Tab. 7—fig. 2

(1905) nomen nudum, Publ. Fac. Sci. Univ. Masaryk, Brno. no. 76: 50 (1926).—Gross. in Fl. URSS XIII: 358 (1948).—Rech. f., l. c. 198 (1957).

Onobrychis Aucheri Boiss. var. Bornm. in Bull. Herb. Boiss. sér. II, V: 846.

Distr. Iran, Afghanistan, Gorn.-Turkm.

Ononis spinosa L., Sp. Pl. 716 (1753).—Muravjeva in Fl. URSS XI: 99, Tab. VII-1 (1945).

subsp. **afghanica** (Širj. et Rech. f.) Kitamura stat. nov.

Ononis afghanica Širj. et Rech. f., Symb. Afgh. III: 10, Fig. 3 (1957).

Doab (July 10, 1955 S. K.).

Distr. Afghanistan.

Oxytropis afghanica Rech. f. et Kôie, Symb. Afgh. III: 177, Fig. 210, 211 (1957).

Distr. Afghanistan.

Oxytropis cabulica Boiss., Diag. Ser. I, IX: 48 (1849), F. O. II: 507.—Rech. f., l. c. 178.

Distr. Afghanistan.

Oxytropis Griffithii Bunge ex Boiss., F. O. II: 502 (1872).—Rechinger f., l. c. 178 (1957).

Distr. Afghanistan.

Oxytropis heratensis Bunge ex Boiss., F. O. II: 507 (1872).—Rechinger f., l. c. 178, Fig. 212 (1957).

Doab (June 24, 1955 S. K.), Doab (July 10, 1955 S. K.), between Bulola and Doab (June 25, 1955 S. K.).

Distr. Afghanistan.

Oxytropis immersa (Baker) Bunge ex B. Fedtsch. in Beih. Bot. Centralbl. XXII, II: 212 (1907).—Vassil. et B. Fedtsch. in Fl. URSS XIII: 25 (1948).—Rech. f., l. c. 178.

Astragalus immersus Baker ex Aitch., J. L. S. XVIII: 45 (1880).

O. pamirica Danguy.

Distr. Afghanistan, Tianshan, Pam.-Al.

Oxytropis minjanensis Rech. f., Symb. Afgh. III: 179, Fig. 213, 214 (1957).

Distr. Afghanistan (Nuristan).

Oxytropis surculosa Rech. f., l. c. 181, Fig. 216, 217 (1957).

Nuristan: Shabul Gul (Aug. 6, 1955 S. K.).

Distr. Afghanistan (Nuristan).

Oxytropis Volkii Rech. f., l. c. 182, Fig. 218, 219 (1957).

Distr. Afghanistan (C).

Phaseolus Mungo L., Mant. I: 101 (1767).—Aitch., J. L. S. XVIII: 160.—Kitamura in Land and Crops of Nepal Himalaya 122 (1956).

Seeds were sold at the markets. Our seeds were collected at Charikar. Native

name was Mash.

Distr. A native of India, widely cultivated in Afghanistan, Pakistan, India, Himalayas.

This is the western vicariant of *Phaseolus radiatus* L. of Eastern Asia.

Phaseolus vulgaris L., Sp. Pl. 723 (1753).—Aitch., J. L. S. XVIII: 50.

Seeds were collected at Nuristan, Voma.

Distr. A native of tropical America.

Pisum sativum L., Sp. Pl. 727 (1753).—Aitch., J. L. S. XIX: 160.—Kitamura in Land and Crops of Nepal Himalaya 121 (1956).

var. **arvense** Poiret in Encycl. Méth. Bot. V: 456 (1804).

Nuristan: Between Kushimaicot and Pushuki cultivated (Aug. 3, 1955 S. K.). The native name in Pushuki was Mashan. Seeds 4.5–5.5 mm in diameter, greenish brown, punctate with dark brown. The same seeds were bought also in Charikar. The native name was Mushonga.

Distr. A native of the Mediterranean Region.

Psoralea drupacea Bunge in Arb. Naturf. Ver. Riga I: 221 (1847).—Boiss., F. O. II: 187.—Rech. f., Symb. Afgh. III: 23.

Between Pulikhumri and Haibak (June 27, 1955 S. K.).

Distr. Iran, Afghanistan, Central Asia, Pakistan.

Robinia Pseudoacasia L., Sp. Pl. 722 (1753).—Bornm. in Engler, Bot. Jahrb. LXVI: 224 (1934).

Sarobi cultivated (June 16, 1955 S. K.)—with fr., Pulikhumri cult. (July 3, 1955 S. K.)—Fr.

Distr. A native of North America.

Sesbania aculeata Poiret, Encycl. VII: 128 (1806).—Aitch., J. L. S. XIX: 157.—Rech. f., l. c. 24 (1957).—Kirtikar and Basu, Indian Medic. Pl. pl. 304.

Distr. Tropics of the old world.

Sophora hortensis (Boiss. et Buhse) Rech. f., Symb. Afgh. III: 8, Fig. 2 (1957).

Keyserlingia Buxbaumii Bunge ex Boiss., F. O. II: 630 p. p.

Edwardsia hortensis Boiss. et Buhse in Nouv. Mém. Soc. Mosc. XII: 77 (1860).

Distr. Afghanistan (E).

Sophora persica (Boiss. et Buhse) Rech. f., l. c. (1957).

Edwardsia persica Boiss. et Buhse, l. c. (1860).

Keyserlingia Buxbaumii Bunge ex Boiss., F. O. II: 630 p. p.

Distr. Afghanistan (W), Iran.

Trifolium arvense L., Sp. Pl. 769 (1753).—Rech. f., l. c. 18 (1957).—Bobrov in Fl. URSS XI: 257 (1945).

Distr. Europe, North Africa, Asia Minor, Caucasus, Gorn.-Turkm., Iran, Afghanistan, W. Siberia, Ussuri.

Trifolium fragiferum L., Sp. Pl. 772.—Boiss., F. O. II: 135.—Baker, F. B. I.

II: 86.—Aitch., J. L. S. XVIII: 42.—Bobrov in Fl. et Syst. VI: 250, fig. 7-1 (1947).
—Rech. f., Symb. Afgh. III: 18.

Charikar (June 24, 1955 S. K.)—fl.

Distr. Europe, North Africa, Asia Minor, Iran, Caucasus, Central Asia, Afghanistan, Kashmir.

According to Bobrov in Fl. URSS XI: 226, this may be *T. neglectum* C. A. Mey.

Trifolium pratense L., Sp. Pl. 768.—Boiss., F. O. II: 115.—Baker, F. B. I. II: 86.—Aitch., J. L. S. XVIII: 42.—Bobrov in Fl. et Syst. VI: 300, Fig. 15-1 (1947).
—Rech. f., l. c. 18.

Distr. Europe, Siberia, Asia Minor, Caucasus, Central Asia, Himalaya: Kashmir to Garwal.

Trifolium repens L., Sp. Pl. 768.—Boiss., F. O. II: 145.—Baker, F. B. I. II: 86.—Bobrov in Fl. URSS XI: 211 (1945).—Rech. f., l. c. 18. (1957).

Distr. Europe, Siberia, Asia Minor, Caucasus, Central Asia, Mongolia, Afghanistan, Pakistan, Himalayas.

Trifolium resupinatum L. var. **majus** Boiss., F. O. II. 137.—Bornm. in Engler, Bot. Jahbr. LXVI: 224.—Bobrov, l. c. 230.—Rech. f., l. c. 18 (1957).

Distr. sp. Mediterranean Region, Caucasus, Central Asia, Iran, Afghanistan.

Trifolium tumens Stev. in M. B., Fl. Taur. Cauc. II: 217 (1808).—Bobrov l. c. 229.

var. **majus** Boiss., F. O. II: 137.

Distr. sp. Caucasus, Iran, Afghanistan.

Trigonella afghanica Vass. in Not. Syst. Herb. XIV: 230 (1951), in Fl. et Syst. X: 162 (1953).

Distr. Afghanistan.

Trigonella bactriana Vass. in Not. Syst. Herb. XIV: 230 (1951), in Fl. et Syst. X: 148.

Trigonella Emodi Aitch. (non Benth.), T. L. S. n. III: 47.

Distr. Afghanistan.

Trigonella badachschanica Aphan. in Fl. Tadzhik. V: 176, 652, in Fl. et Syst. X: 150, fig. 6.

Distr. Afghanistan, Pam.-Al.

Trigonella corniculata L., Syst. 10 ed. 1180 (1759).—Baker, F. B. I. II: 88.—Aitch., J. L. S. XVIII: 43.

Distr. South Europe, Asia Minor, Afghanistan, Pakistan, India, Himalaya: from Kashmir to Nepal.

Trigonella Emodi Benth. in Royle, Ill. 197 (1835).—Baker, F. B. I. II: 88.—Aitch., J. L. S. XVIII: 42.—Wendelbo in Nytt Mag. Bot. I: 41 (1952).—Vass. in Fl. et Syst. X 10: 158, Fig. 9 (1953).

Trigonella cachemiriana Camb. in Jacq., Voy. Bot. t. 41 (1844).—Boiss., F.

O. II: 88.—Vass. in Fl. et Syst. X: 149 (1953).

Trigonella Foenum-graecum L., Sp. Pl. 777.—Aitch., T. L. S. n. III: 48.—Gross. in Fl. URSS XI: 119, Tab. IX-6 (1945).—Rech. f., Symb. Afgh. III: 12.

Seeds bought at Kunduz. The native name was Olba. They are cooked with rice, and said to be good for stomach. Another native name is Shamli according to Aitchison (1868).

Distr. Mediterranean Region, Afghanistan, Pakistan, Kashmir, India. Widely cultivated.

Trigonella geminiflora Bunge in Arb. Naturf. Ver. Riga I: 219 (1847).—Gross. in Fl. URSS XI: 115, Tab. VIII-13 (1945).—Vass., l. c. 224.—Rech. f., l. c. 12 (1957).

Distr. Afghanistan, Central Asia, Pakistan, Mongolia.

var. **curvata** Širj. et Rech. f., l. c. (1957).

Distr. Afghanistan (C).

Trigonella gharuensis Rech. f., Symb. Afgh. III: 12, Fig. 4, 5 (1957).

Distr. Afghanistan (E).

Trigonella grandiflora Bunge in Arb. Naturf. Ver. Riga I: 218 (1847).—Boiss., F. O. II: 73.—Gross. in Fl. URSS XI: 106, Tab. VIII-3 (1945).—Vass., l. c. 201.—Rechinger f., l. c. 14 (1957).

Distr. E. Europe, Afghanistan (NW), Central Asia: Gorn.-Turkm., Amu-Dar., Pam.-Al., Syr-Dar.

Trigonella gracilis Benth. in Royle, Ill. 197 (1835).—Baker, F. B. I. II: 88.

Nuristan: Between Kushimaicot and Pushuki (Aug. 3, 1955 S. K.).

Distr. Afghanistan (E), Himalaya: from Kashmir to Kumaon.

Trigonella Griffithii Boiss., F. O. II: 88 (1872).—Rech. f., l. c. 10 (1957).—Vass. in Fl. et Syst. X: 148 (1953).

Shibar Pass (June 24, 1955 S. K.), between Pulikhumri and Haibak (June 27, 1955 S. K.).

Distr. Afghanistan, Pam.-Al.

Trigonella incisa Benth. in Royle, Ill. 197 (1835).—Jacquem., Voy. Bot. t. 42 (1844).—Boiss., F. O. II: 76.—Rech. f., l. c. 14 (1957).—Vass., l. c. 225 (1953).

Trigonella Brahuica Boiss., F. O. II: 73.

Charikar (June 23, 1955 S. K.).

Distr. Afghanistan, Pakistan, India.

Trigonella Koeiei Širj. et Rech. f., Symb. Afgh. III: 14, Fig. 6, 7 (1957).

Distr. Afghanistan (C).

Trigonella laxiflora Aitch. et Baker, J. L. S. n. III: 47 (1888).—Gross., l. c. 126, Tab. IX-14 (1945).—Vass. in Fl. et Syst. X: 159, fig. 10 (1953).

Distr. Afghanistan (NW), Gorn.-Turkm.

Trigonella Lipskyi Širj. var. **Edelbergii** Širj. et Rech. f., Symb. Afgh. III: 15

(1957).

Distr. Afghanistan (C).

Trigonella monantha C. A. Mey., Verz. Pfl. Caucas. 137 (1831).—Gross. in Fl. URSS XI: 114, Tab. VIII-11 (1945).—Boiss., F. O. II: 77.—Aitch., T. L. S. n. III: 68.

Distr. Asia Minor, Armenia, Mesopotamia, Caucasus, Iran, Gorn.-Turkm., Afghanistan (W).

Trigonella Noëana Boiss., Diag. Ser. II, II: 11 (1856), F. O. II: 77.—Bornm. in Engler, Bot. Jahrb. LXVI: 224 (1934).—Gross. in Fl. URSS XI: 115, Tab. VIII-12 (1945).—Vass., l. c. 223 (1953).—Rech. f., l. c. 16 (1957).

Distr. Afghanistan, Iran, Asia Minor, Caucasus, Central Asia.

Trigonella retrorsa Boiss., F. O. II: 78 (1872).—Vass., l. c. 228 (1953).

Distr. Afghanistan.

Trigonella uncata Boiss. et Noë, Diag. Ser. II, II: 12 (1856), F. O. II: 84.

Distr. Afghanistan, Iran, Mesopotamia.

Vicia angustifolia¹L., Amoen. Academ. IV: 105 (1759).—Boiss., F. O. II: 574.—B. Fedtsch., Fl. URSS XIII: 464.—Rech. f., l. c. 202.

Distr. Europe, North Africa, Caucasus, Siberia, Central Asia (common), Asia Minor, Iran, Afghanistan, Pakistan.

Vicia Boissieri Freyn in Bull. Herb. Boiss. III: 191 (1895).—B. Fedtsch., Fl. URSS XIII: 440.—Rech. f., l. c. 203.

Distr. E. Europe, Caucasus, Balk.—Asia Minor, Arm.-Kurd., Iran, Afghanistan.

Vicia calcarata Desf., Fl. Atl. II: 166 (1800).—Rech. f., l. c. 203.

Distr. Mediterranean Region, Caucasus, Central Asia (common), Afghanistan, Pakistan.

Vicia Cracca L., Sp. Pl. 735 (1753).—Boiss., F. O. II: 585.—B. Fedtsch., l. c. 436.—Rech. f., l. c. 203.

Distr. Europe, Siberia, Dahuria, Caucasus, Central Asia, Asia Minor, Afghanistan.

Vicia Ervilia (L.) Willd., Sp. Pl. III: 1103 (1800).—Boiss., F. O. II: 595.—Aitch., T. L. S. n. III: 59.—B. Fedtsch., l. c. 407.—Rech. f., l. c. 203.

Shibar Pass (July 11, 1955, S. K.).

Distr. Mediterranean Region, Asia Minor, Caucasus, Iran, Afghanistan.

Vicia Faba L., Sp. Pl. 737 (1753).—B. Fedtsch. in Fl. URSS XIII: 474 (1948).—Rechinger f., l. c. 203.

Bamian cultivated (June 24, 1955, S. K.).

The seeds bought at Voma, Nuristan are very small 8–9 mm long, black.

Distr. The wild plant is not yet recognized.

Vicia Griffithii Baker, F. B. I. II: 178.

Distr. Afghanistan (Griffith n. 1114), Pakistan.

Vicia hirsuta (L.) Gray, Syst. arrang. Brit. pl. II: 614 (1821).—Boiss., F. O. II:

595.—B. Fedtsch., l. c. 408.—Rech. f., l. c. 203.

Distr. Europe, Abyssinia, Siberia, Ussuri, Asia Minor, Caucasus, Iran, Afghanistan, Pakistan, Himalaya, India.

Vicia hyrcanica Fisch. et Mey., Index Seminum Horti Petrop. II: 53 (1835).—Boiss., F. O. II: 571.—Aitch., J. L. S. XIX: 160, T. L. S. n. III: 59.—B. Fedtsch., l. c. 465.—Rech. f., l. c. 203.

Distr. Caucasus, Central Asia (common), Iran, Afghanistan.

Vicia peregrina L., Sp. Pl. 737 (1753).—Boiss., F. O. II: 576.—Aitch., T. L. S. n. III: 59.—B. Fedtsch., l. c. 466.—Rech. f., l. c. 203.

Shishigar (June 11, 1955 S. K.).

Distr. Europe, North Africa, Caucasus, Central Asia (common), Iran, Afghanistan, Pakistan.

Vicia persica Boiss., Diag. pl. Ser. I, IX: 103 (1849), F. O. II: 582.—Rech. f., Symb. Afgh. III: 431 (1957).

V. Aucheri Jaub. et Spach, Ill. Pl. Orient. I, t. 41 (1842).

Distr. Iran, Afghanistan.

Vicia rigidula Royle, Ill. Himal. Mount. 200 (1835).—Baker, F. B. I. II: 170.

Lathyrus himalayensis Camb. in Jacquem., Voy. Bot. I: 44, t. 53 (1844).

Vicia pseudocassubica Rech. f., Symb. Afgh. III: 203, Fig. 242, 243 (1957).

Nuristan: Chatrass (Aug. 2, 1955 S. K.), Pronz (Aug. 4, 1955 S. K.), between Pushuki and Kushitaki (Aug. 4, 1955, S. K.).

Distr. Afghanistan, Himalaya: Kashmir to Kumaon.

Vicia sativa L., Sp. Pl. 736 (1753).—Aitch., J. L. S. XVIII: 49.—B. Fedtsch., l. c. 460.—Rech. f., l. c. 205.

Distr. Mediterranean Region, Western Asia. Widely naturalized in the World.

Vicia subvillosa (Ledeb.) Trautv. in Tr. B. S. III: 42 (1875).—B. Fedtsch., l. c. 426.

Lathyrus subvillosus Aitch. et Hemsl., T. L. S. n. III: 59.

Distr. Pribalx., Syr-Dar., Tianshan, Pam.-Al., Afghanistan (NW).

Vicia tenuifolia Roth, Ten. Fl. Germ. I: 309 (1788).—Baker, F. B. I. II: 177.—B. Fedtsch., l. c. 440. Bot. Mag. t. 2141. Reichb., Ic. Fl. Germ. XXII t. 231 f. 1–8.

Nuristan: Between Kushimaicot and Pushuki (Aug. 3, 1955 S. K.), Chatrass (Aug. 2, 1955 S. K.), between Kushitaki and Pronz (Aug. 4, 1955 S. K.).

Distr. Europe, Caucasus, Siberia, Central Asia, Afghanistan, Western Himalaya.

Vicia tetrasperma (L.) Moench, Meth. 148 (1794).—Boiss., F. O. II: 596.—B. Fedtsch., l. c. 410.—Rech. f., l. c. 206.

Distr. Europe, Siberia, Japan, Caucasus, Asia Minor, Central Asia, Afghanistan, Himalayas.

Vicia variabilis Freyn et Sint. in Österr. Bot. Zeit. XLIII: 82 (1893).—B. Fedtsch., Fl. URSS XIII: 438.—Rech. f., Symb. Afgh. III: 206.

Distr. Afghanistan, Caucasus, Iran, Arm.-Kurd., Asia Minor.

Vicia villosa Roth, Tent. Fl. Germ. II, 2: 182 (1789).—Boiss., F. O. II: 591.—Aitch., T. L. S. n. III: 59.—B. Fedtsch., l. c. 450.—Rech. f., l. c. 206.

Zerni (Sept. 2, 1955 T. Umesao), Pagman near Kabul (July 15, 1955 S. K.), Charikar (June 24, 1955 S. K.).

Distr. Europe, Caucasus, Asia Minor, Central Asia, Iran, Afghanistan.

Vigna sinensis Savi ex Hassk., Cat. Hort Bogor. 279 (1844).—Endlich. ex Hassk., Pl. Jav. Rar. 386 (1848).

Kunduz, Experimental Farm, cultivated (July 8, 1955 S. K.).

The seeds were bought at Voma, Nuristan. Pashutu called these, Paiti. At Kandahar, the native name was Laobia; at Kunduz, native name Lobia.

Distr. A native of tropical region of the old world.

Oxalidaceae

Oxalis corniculata L., Sp. Pl. 433 (1753).—Boiss., F. O. I: 866.—Reich., Ic. V: t. 198.—Gorsch. in Fl. URSS XIV: 77 (1949).

Kunduz (July 6, 1955 S. K.), Nuristan: Between Seprigal and Voma (July 27, 1955 S. K.).

Distr. Eurasia, America.

Geraniaceae by Hiroshi Hara

Biebersteinia multifida DC., Prodr. I: 708 (1824).—Boiss., F. O. I: 899.—Aitch., T. L. S. n. III: 44.—Vvedenski in Fl. URSS XIV: 75.—Jaub. et Spach, Ill. Pl. Or. II: t. 191, 192, 193.

Distr. Caucasus, Central Asia, Iran, Afghanistan.

Erodium bryoniaefolium Boissier, Diag. Pl. Or. Ser. I, I: 61 (1842), F. O. I: 896 (1867).—Aitch., T. L. S. n. III: 45.—Kunth in Engler, Pfl.-reich IV-129, Ht. 53: 226 (1912).—Rech. f., l. c. 56.

Between Pulikhumri and Haibak (June 27, 1955 S. K.).

Distr. N.E. Africa, Iran, Afghanistan, Turkestan.

Erodium ciconium (L.) Ait., Hort. Kew. II: 415 (1789).—Boiss., F. O. I: 891.—Aitch., T. L. S. n. III: 44.—Vved. in Fl. URSS XIV: 71 (1949).—Rech. f., l. c. 56 (var. *tenuisectum* Nym.). Reich., Ic. Fl. Germ. V: t. 184, f. 4866.

Distr. Europe, Caucasus, Central Asia, Asia Minor, Syria, Mesopotamia.

Erodium cicutarium (L.) L'Héritier ex Aiton, Hort. Kew. 1 ed. II: 414 (1789).—Boiss., F. O. I: 890 (1867).—Edgew. et Hooker f., F. B. I. I: 434.—Aitch., J. L. S. XVIII: 39, T. L. S. n. III: 44.—Kunth, l. c. 274 (1912).—Vvedenski in Fl. URSS XIV: 71 (1949).—Rech. f., l. c. 56.

Kandahar (June 6, 1955 S. K.), Charikar (June 24, 1955 S. K.), Nuristan: Between Pronz and Eschtaway (Aug. 5, 1955 S. K.).

Distr. N. Africa, Europe, Caucasus, Asia Minor, Siberia, C. Asia, Iran, Afghanistan,

and W. Himalaya.

Erodium laciniatum (Cav.) Willd., Sp. Pl. III: 633 (1800).—Rech. f., l. c. 57.
var. **pulverulentum** (Cav.) Boiss., F. O. I: 893 (1867).—Knuth in Pflanzenreich
Ht. 53: 243 (1912).—Rech. f., l. c. 57.

Distr. Afghanistan, Pakistan, Iran, Mediterranean Reg.

Geranium collinum Stephan. ex Willd., Sp. Pl. III: 705 (1800).—Boiss., F. O. I: 874.—Edgew. et Hooker f., F. B. I. I: 429.—Knuth, l. c. 185.—Bobrov in Fl. URSS XIV: 43 (1949).

var. **collinum** (var. *adenotrichum* (Schrenk) Briquet var. *glandulosum* Ledeb.—Rech. f., l. c. 55).

Nuristan: Between Voma and Chatrass (Aug. 1, 1955 S. K.), Chatrass (Aug. 2, 1955 S. K.).

var. **eglandulosum** Ledeb., Fl. Ross. I: 468 (1842).—Knuth, l. c. 1861 (1912).—Rech. f., l. c. 55.

Geranium humifusum R. Knuth in Engler, Bot. Jahrb. XXXII: 211 (1903).

Distr. sp. S. E. Europe, Caucasus, Kurdistan, Iran, Afghanistan, C. Asia, Altai, W. Himalaya, Tibet and Mongolia.

Geranium Meeboldii Briq. in Ann. Cons. et Jard. Bot. Genève, 11–12: 184 (1908).—Bobrov in Fl. URSS XIV: 45 (1949).—Rech. f., l. c. 56.

Distr. Afghanistan (Nuristan), Pam.–Al., Himalayas, Dz.–Kashg.

Geranium molle L., Sp. Pl. 682 (1753).—Knuth in Pflanzenreich Heft 53: 58 (1912).—Bobrov, l. c. 55, Tab. V–5 (1949).—Rech. f., l. c. 56.

var. **glandulosum** Vis., Fl. Dalm. III: 212 (1852).—Knuth, l. c. 58.—Rech. f., l. c.

Distr. sp. Europe, North Africa, Caucasus, Iran, Afghanistan, Himalaya: from Kashmir to Kumaon.

Geranium pratense L., Sp. Pl. 681 (1753).—Knuth, l. c. 127.—Rech. f., l. c. 56.

Distr. Eurasia.

Geranium nepalense Sweet, Geran. I: t. 12 (1820).—Edgew. et Hooker f., F. B. I. I: 430.—Aitch., J. L. S. XVIII: 39.—Knuth, l. c. 192 (1912).

Distr. sp. Afghanistan (E), Himalayas, India and China (var. in Japan and Korea).

Geranium rotundifolium L., Sp. Pl. 683 (1753).—Boiss., F. O. I: 880.—Aitch., T. L. S. n. III: 44.—Bobrov in Fl. URSS XIV: 56, Tab. V–8 (1949).—Rech. f., l. c. 56. Reich., Ic. V: t. 190.

Distr. Europe, North Africa, Caucasus, Central Asia, Asia Minor, Iran, Afghanistan, Pakistan, Himalaya: from Kashmir to Garwal, Siberia, Ussuri.

Geranium sibiricum L., Sp. Pl. 683 (1753).—Boiss., F. O. I: 879.—Edgew. et Hooker f., F. B. I. I: 431.—Knuth, l. c. 195 (1912).—Bobrov in Fl. URSS XIV: 57 (1949).

f. **glabrius** Hara in Journ. Jap. Bot. XXII: 171 (1948).

Nuristan: Between Seprigal and Voma (Aug. 29, 1955 S. K.), between Voma and Chatrass (Aug. 1, 1955 S. K.), between Voma and Trokikorl (July 31, 1955 S. K.).

Distr. E. Europe, Caucasus, Siberia, China, N. Japan, Afghanistan (E), Himalayas and Tibet.

Geranium tuberosum L., Sp. Pl. 680 (1753).

var. **Charlesii** Aitch. et Hemsl. in Curtis's Bot. Mag. CXII: t. 6910 (1886), T. L. S. n. III: 44.—Bornm. in Engler, Bot. Jahrb. LXVI: 223 (1934).

Geranium Charlesii (Aitch. et Hemsl.) Vved. ex Nevski in Tr. Bot. Inst. An. SSSR sér. I, IV: 304 (1937).—Bobrov in Fl. URSS XIV: 62, Tab. III-8 (1949). Rech. f., l. c. 54.

Distr. Afghanistan (NW), Pam.—Al.

Geranium Wallichianum Don ex Sweet, Geran. I: t. 90 (1821).—Edgew. et Hooker f., F. B. I. I: 430.—Aitch., J. L. S. XVIII: 39.—Knuth, l. c. 194 p. p.—Hara in Fauna and Flora of Nepal Himalaya 169 (1955).—Rech. f., l. c. 56.

Distr. Afghanistan (E), Himalaya: from Kashmir to Nepal.

Geranium sp.

Shibar Pass (June 24, 1955 S. K.).

This plant is near to *G. collinum* var. *eglandulosum* but is much robust attaining 80 cm high, its leaves are almost glabrous above, its lobes more obtuse at the tip, and its stipules larger and less hairy. *G. humifusum* Knuth described from the Kuram Valley is also allied to this plant, but it was later reduced to a synonym of *G. collinum* var. *eglandulosum* by the author himself.

Linaceae

Linum catharticum L., Sp. Pl. 281 (1753).—Juzep. in Fl. URSS XIV: 127 (1949).—Rech. f., Symb. Afgh. IV: (1959).

Distr. Europe, North Africa, Asia Minor, Caucasus, Iran, Afghanistan.

Linum corymbulosum Rechb., Fl. Germ. excurs. 834 (1832), Ic. VI: t. 326, f. 5169 (sub Cathartolino).—Boiss., F. O. I: 852.—Juzep. in Fl. URSS XIV: 128 (1949).

Distr. Europe, North Africa, Caucasus, Gorn.—Turkm., Asia Minor, Iran, Afghanistan.

Rechinger reported *L. liburnicum* Scop. from Afghanistan in Symb. Afgh. IV: 58.

Linum humile Miller, Gard. Dict. ed. 8 (1768).—Boiss., F. O. I: 861.—Juzep. in Fl. URSS XIV: 102 (1949).—Rech. f., l. c. 58.

Distr. Europe, North Africa, Caucasus, W. Siberia, Central Asia, Afghanistan, Asia Minor, Iran, Dz.—Kashg.

Linum mesostylum Juz., l. c. 107, 714.—Rech. f., l. c. 58.

Distr. Tianshan, Pam.-Al., Afghanistan.

Linum Stocksianum Boiss., Diag. Ser. II, I: 98 (1854).

Linum perenne L. var. *Stocksianum* Boiss., F. O. I: 865.

Linum perenne Aitch. (non L.), J. L. S. XVIII: 39.—Rech. f., l. c. 58.

Nuristan: Between Kushitaki and Pronz (Aug. 4, 1955 S. K.)—Stem numerous, to 45 cm long, leaves linear, to 24 mm long, flowers few.

Distr. Afghanistan, Pakistan.

Linum macrorhizum Juz. is closely related to this species.

Linum strictum L., Sp. Pl. 279 (1753).—Boiss., F. O. I: 852.—Rech. f., l. c. 58. Reich. Ic. VI: t. 327, f. 5170.

Distr. Mediterranean Region, Iran, Afghanistan.

Linum usitatissimum L., Sp. Pl. 277 (1753).—Boiss., F. O. I: 860.—Reich., Ic. VI: t. 329, f. 5155.

Between Haibak and Mazarisharif (June 27, 1955 S. K.)—Cultivated.

Distr. A cultivated plant originated in the Mediterranean Region.

Zygophyllaceae

Fagonia arabica L., Sp. Pl. 386.—Boiss., F. O. I: 907 (1867).—Aitch., T. L. S. n. III: 44 (1888).—Hooker f., F. B. I. I: 425 (1874).—Engler in Pflanzenfam. 2 ed. Band 19a: 159 (1931).—Kir. & Basu, Indian Med. Plant Pl. 171 (1918).

Distr. Egypt, Arabia to Afghanistan, Pakistan, India.

Fagonia Bruguieri DC., Prodr. I: 704 (1824).—Boiss., F. O. I: 905 (1867).—Hooker f., F. B. I. I: 425 (1874).—Kir. & Basu, Indian Medical Plant Pl. 170 B (1918).

Distr. Algeria, Egypt, Arabia, Mesopotamia, Iran, Afghanistan, Pakistan.

Miltianthus portulacoides Bunge in Arbeit. Natur. Ver. Riga I: 197, t. 9 (1847).—Boiss., F. O. I: 916 (1867).—Aitch., T. L. S. n. III: 43 (1888).

Zygophyllum portulacoides Cham. in Linnaea V: 50 (1830).—Bobrov. in Fl. URSS XIV: 158 (1949).

Distr. Kiz.-Kum., Amu-Dar, Syr-Dar., Afghanistan (W).

Nitraria Schoberi L., Syst. Nat. 10 ed. II: 1044 (1759).—Boiss., F. O. I: 919 (1867).—Engler in Pflanzenfam. 2 ed. Bd. 19a: 178, f. 85 a-g (1931).—Bobrov in Fl. URSS XIV: 197 (1949).

Nitraria Schoberi var. *caspica* Pall., Fl. Ross. I: 79, T. 50, fig. B (1784).

Nitraria Olivieri Jaub. et Sp., Ill. Pl. Or. III t. 295 (1847-50).

Bamian (June 25, 1955 S. K.).

Distr. Eastern Europe, Asia Minor, Caucasus, Mesopotamia, Iran, Afghanistan, Western Siberia, Central Asia, Dz.-Kashg.

A shrub with many small white flowers. The stem is white.

Peganum Halmala L., Sp. Pl. 444 (1753).—Boiss., F. O. I: 917 (1867).—Aitch.

in J. L. S. XVIII: 40 (1880).—Hooker f., F. B. I. I: 486 (1874).—Bob. in Fl. URSS XIV: 148 (1949).—Bornm. in Engler, Bot. Jahrb. LXVI: 223 (1934).—Engler in Pflanzenfam. 2 ed. Bd. 19a: 154, fig. 70 (1931).

Jalalabad (June 17, 1955 S. K.).

Distr. From Mediterranean Region to Mongolia.

Very abundant on roadside. One of the common plants in Afghanistan and Pakistan. Probably distributed by human agency.

Peganum crithmifolium Retz., Obserb. Bot. III: 34 (1783).—Boiss., F. O. I: 917 (1867).

Malacocarpus crithmifolium (Retz.) C. A. Mey. in Ind. Sem. Petrop. IX: 79 (1843).—Bobrov in Fl. URSS XIV: 150 (1949).

Between Doab and Shibar (July 11, 1955 S. K.).

Distr. Aralo-Kasp., Kara-Kum., Gorn.-Turkm., Iran, Afghanistan.

Tribulus bimucronatus Viv., Dec. Pl. Egypt. 9, t. 2 fig. 4 (1831).—Boiss., F. O. I: 901 (1867).

Distr. Egypt, Arabia, Afghanistan.

Tribulus macropterus Boiss., Diag. Ser. I, I: 61 (1842), F. O. I: 903 (1867).—Bobrov in Fl. URSS XIV: 194 (1949).

Tribulus alatus Del. var. Aitch. in T. L. S. n. III: 43 (1888).

Distr. Egypt, Iran: Between Selazewar and Damagan (July 11, 1955 K. Yamashita), Afghanistan, Amu-Daria.

Tribulus terrestris L., Sp. Pl. 387 (1753).—Boiss., F. O. I: 902 (1867).—Aitch. in J. L. S. XIX: 155, in T. L. S. n. III: 43.—Hooker f., F. B. I. I: 423 (1874).—Bobrov in Fl. URSS XIV: 195 (1949).

Kunduz (July 6, 1955 S. K.), between Jalalabad and Sarobi (June 17, 1955 S. K.), between Bulola and Doab (June 25, 1955 S. K.).

Distr. Eurasia, widely distributed.

Zygophyllum atriplicoides Fischer, Zygophyll. 12 (1834).—Boiss., F. O. I: 911 (1867).—Aitch. in T. L. S. n. III: 44.—Boriss. in Fl. URSS XIV: 191 (1949).

Halimiphyllum atriplicioides (Fischer et Mey.) Boriss. in Not. Syst. URSS XVIII: 150 (1957).

Distr. Caucasus, Gorn.-Turkm., Iran, Afghanistan.

Zygophyllum eurypterum Boiss. et Buhse, Aufzähl. Pfl. Pers. 49 (1860).—Boiss., F. O. I: 912 (1867).—Boriss. in Fl. URSS XIV: 189, Tab. X-4 (1949).

Halimiphyllum eurypterum (Boiss. et Buhse) Boriss., l. c. 146 (1957).

Distr. Gorn.-Turkm., Kara-Kum., Pam.-Al., Syria, Iran, Afghanistan, Pakistan.

Zygophyllum Fabago L., Sp. Pl. 385 (1753).—Boiss., F. O. I: 913 (1867).—Aitch. in T. L. S. n. III: 44.

var. **oxianum** (Boriss.) Kitamura comb. nov.

Zygophyllum oxianum Boriss. in Fl. URSS XIV: 160, Tab. IX-6, 723 (1949).

Tashikurgan (June 27, 1955 S. K.) with fr., Kandahar (June 8, 1955 S. K.), Bamian (June 25, 1955 S. K.).

Distr. Kyz.-Kum., Aralo-Kasp., Syr-Dar., Kara-Kum., Pam.-Al., Afghanistan.

One of the common plants of Afghanistan. Fruits erect and shorter (15–18 mm long) than of var. *Fabago*.

Tetradiclis tenella (Ehrenb.) Litw. in Additam. ad Herb. Fl. Ross. 151 (1908).—Engler in Pflanzenfam. 2 ed. Bd. 19a: 156 (1931).—Bobrov in Fl. URSS XIV: 151 (1949).

Anatropa tenella Ehrenb. in Linnaea IV: 402 (1829).

Tetradiclis salsa C. A. M., Verz. Pfl. Cauc. 226 (1831).—Boiss., F. O. I: 918 (1867).—Aitch. in T. L. S. n. III: 46.

Distr. Egypt, Syria, Syresia, Mesopotamia, Iran, Eastern Europe, Caucasus, Afghanistan (W), Pakistan.

Rutaceae

Citrus Aurantiacum L., Sp. Pl. 783 (1753). **Fig. 7.**

Kalatus-siraj (June 16, 1955 S. K.) —cultivated, Jalalabad (June 17, 1955 S. K.) —cultivated.

Distr. A native of India.

Haplophyllum acutiflorum (DC.) G. Don, Gen. Syst. I: 780 (1831).—DC. in Deless., Ic. III: 26, t. 44 (1837).—Boiss., F. O. I: 942 (1867).—Vved. in Fl. URSS XIV: 226 (1949).

Ruta acutifolia DC., Prodr. I: 711 (1824).—Aitch., J. L. S. XVIII: 40 (1880), T. L. S. n. III: 45.

Distr. Iran, Gorn.-Turkm., Afghanistan.

Haplophyllum affine (Aitch. et Hemsl.) Eug. Kor. in Izv. Inst. Pochv. and Geobot. S. A. G. U. I: 22 (1925).—Bornmüller in Engler, Bot. Jahrb. LXVI: 223 (1934).—Vved. in Fl. URSS XIV: 212 (1949).

Ruta affinis Aitch. et Hemsl. in T. L. S. n. III: 45, t. V f. 1–10 (1888).

H. badghysi Eug. Kor. in Bodenk. u. Pflanzengeogr. Beob. u. Unters. i Flussgeb. d. Amur-Dar. u. Syr. Dar. II: 59 (1916).

Distr. Gorn.-Turkm., Afghanistan.

Haplophyllum erythraeum Boiss., Diag. Ser. II, I: 114 (1854), F. O. I: 929 (1867).

Ruta erythraea (Boiss.) Aitch. et Hemsl. in T. L. S. n. III: 45.

Distr. Afghanistan, Pakistan.

Haplophyllum afghanicum Akhtar in Indian Forester LXVI: 606 (1940).

Distr. Afghanistan.

Haplophyllum flexuosum Boiss., Diag. Ser. II, I: 118 (1854), F. O. I: 942 (1867).

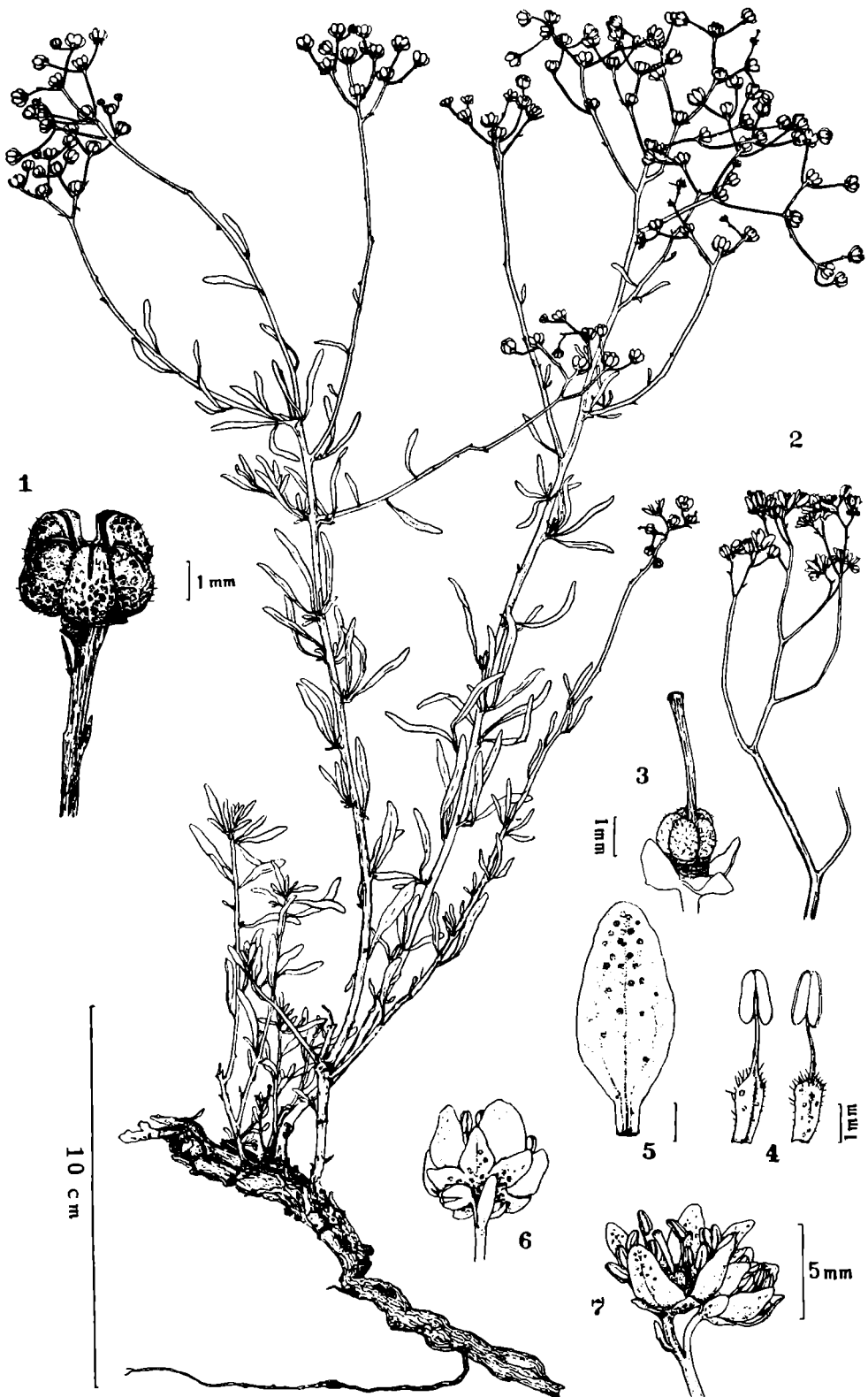


Fig. 75. *Haplophyllum superpositum* Kitam.: 1 Capsule, 2 Inflorescence, 3 Pistil, 4 Stamens, 5 Petal, 6 and 7 Flowers. (Sarobi).

Between Sarobi and Kabul (June 18, 1955 S. K.).

Distr. Afghanistan.

Haplophyllum Griffithianum Boiss., Diag. Ser. II, I: 115 (1854), F. O. I: 933 (1867).

Doab (July 10, 1955 S. K.), Lataband, Mullaomur (June 15, 1955 S. K.).

Distr. Afghanistan.

Haplophyllum pedicellatum Bunge in Boiss., F. O. I: 925 (1867).—Vved. in Fl. URSS XIV: 206 (1948).

Ruta pedicellata Aitch. et Hemsl. in T. L. S. n. III: 45.

Between Doab and Pulikhumri (June 26, 1955 S. K.), between Pulikhumri and Haibak (June 27, 1955 S. K.).

Distr. Iran, Afghanistan, Syr-Dar., Kyz.-Kum., Kara-Kum., Pam.-Al., Gorn.-Turkm.

The stem patentely hairy. Calyx villous when young.

Haplophyllum rotundifolium (Aitch. et Hemsl.) Kitamura comb. nov.

Ruta rotundifolia Aitch. et Hemsl. in T. L. S. n. III: 45, t. 5, f. 11-16 (1888).

Distr. Afghanistan (W).

Haplophyllum superpositum Kitamura in Acta Phytotax. Geobot. XVII: 132 (1958). **Fig. 75.**

Rhizoma obliquum lignosum. Caulis caespitosus erectus vel ascendens 30-50 cm altus glaber sub lente glanduloso-punctatus glaucus inferne leviter purpurascens, teres 2-3 mm in diametro, superne corymbosim ramosus. Folia inferiora oblanceolata plana integra 20-35 mm longa 4-5 mm lata apice obtusa basi sensim angustata breviter petiolata, utrinque glabra, folia caulina media trisecta 20-30 mm longa glabra sub lente glanduloso-punctata, laciniis linearibus integris obtusis 1-2 mm latis, petiolo 1-6 mm longo, folia caulina superiora integra linearia sursum depauperata. Inflorescentia cymosa, ramis plus minus divaricatis. Flores 6.5 mm in diametro, pedicellis lateralibus demum strictis, ad 8 mm longis sub lente striatis, bracteolis minutis 1 mm longis praeditis. Corolla 4-6 mm longa obovato-oblonga apice obtusa basi unguiculata glabra flava. Calyx persistens, sepalis ovato-delloideis 0.5-0.8 mm longis obtusis. Filamenta glabra eglandulosa 2.5-3.5 mm longa infra medium dilatato-membranacea ad medium dense barbata. Stylus 2-3 mm longus glaber, stigma capitatum. Ovarium 5-loculare, loculis biovulatis, ovulis superpositis. Capsula exappendiculata 3.5 mm in diametro glanduloso-punctata, minute hirsuta, introrsum dehiscens. Semina reniformia 1.2 mm longa transverse rugosa.

Sarobi (June 16, 1955 S. Kitamura)—Typus in Herb. Univ. Kyoto, Doab (June 25, 1955 S. Kitamura).

This is the second species with superposed two ovules in each locule of the ovary.

Distr. Afghanistan.

Burseraceae

Balsamodendron pubescens Stocks in Journ. As. Soc. Bomb. II: 395, t. 26 (1848), in Kew Journ. I: 269, t. 9 (1849).—Boiss., F. O. II: 2.—Kirtikar and Basu, Indian Medical Pl. pl. 212.

Distr. Afghanistan, Pakistan.

Meliaceae

Cedrela Toona Roxb. ex Rottl. & Willd. in Gesell. Nat. Freunde. N. Schr. IV: 198 (1803), Cor. Pl. III: t. 238. Wight, Ic. 161.

Toona ciliata M. Roem., Syn. Hesper. 139 (1846).—Harms in Pflanzenfam. 2 ed. 19b1: 45 (1940).

Jalalabad (June 17, 1955 S. K.)—cultivated, as the street tree.

Distr. sp. Himalayas, India, S. China, Java, Australia.

Melia Azedarach L., Sp. Pl. 384 (1753).—Aitch., J. L. S. XVIII: 40.

Distr. sp. Himalayas, China, Japan, cultivated in Afghanistan.

Polygalaceae

Polygala abyssinica Fresenius, Mus. Senk. II: 273 (1837).—Bennett, F. B. I. I: 202.—Aitch., J. L. S. XVIII: 36.

Distr. Africa, Afghanistan, Pakistan, Himalaya: from Marri to Kumaon.

Polygala Hohenackeriana Fisch. et Mey., Index Sem. Horti Petrop. IV: 42 (1837).—Bennett, F. B. I. I: 202.—Aitch., J. L. S. XVIII: 36.

var. **Stocksiana** Chodat in Mém. Soc. Phys. de Genève XXXI, 2: 478, tab. 34, f. 54–55 (1893).

P. Hohenackeriana β. *Stocksiana* Boiss., F. O. I: 472.

P. Stocksiana Boiss., Diag. Ser. II, I: 59 (1853).—Nevski et Tamamschjan in Fl. URSS XIV: 254 (1949).

Distr. Afghanistan, Pakistan, Iran, Arm.—Kurd.

Polygala sibirica L., Sp. Pl. 702 (1753).—Ledeb., Ic. Ross. V: 448.—Boiss., F. O. I: 470.—Aitch., J. L. S. XVIII: 36.—Nevski et Tamamschjan in Fl. URSS XIV: 250 (1949).

P. monopetala Camb. in Jacq., Voy. Bot. t. 27 (1844).

P. myrsinites Royle, Ill. t. 19A.

Distr. Eurasia.

Euphorbiaceae

Andrachne rotundifolia C. A. Mey. in Eichw., Pl. Nov. Casp.–Cauc. 18, t. 20 (1831).—Pajark. in Fl. URSS XIV: 272 (1949).

Andrachne telephoides sensu Boiss., F. O. IV: 1138 (1879) pro parte.—Hooker

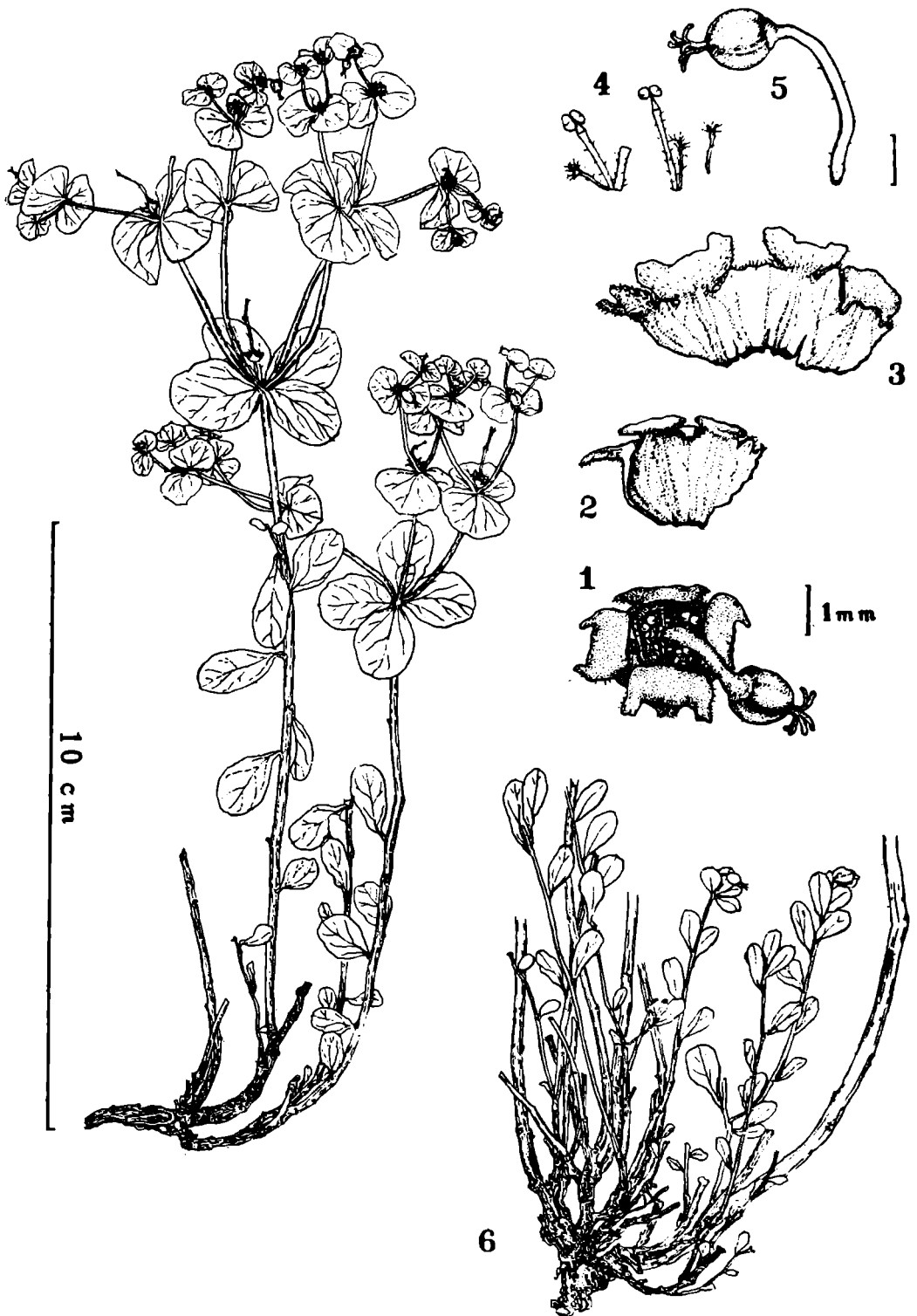


Fig. 76. *Euphorbia ecorniculata* Kitam. 1 Inflorescence, 2 and 3 Involucres with Nectaries, 4 Male Flower, 5 Female Flower, 6 Lower part of Plant. (Between Bulola and Doab).

f., F. B. I. V: 284 (1885).—Aitchison, T. L. S. n. III: 108 (1888).

Lataband, Mullaomur (June 15, 1955 S. K.), Pulikhumri (July 2, 1955 S. K.), Sarobi (June 16, 1955 S. K.), Charikar (June 23, 1955 S. K.).

Distr. Afghanistan, Pakistan, Iran, Caucasus, Central Asia, Aralo-Kasp., Kyz.-Kum., Gorn.-Turkm., Pamiro-Al., Tianshan.

All Afghan specimens usually with round leaves.

Chrozophora hierosolymitana Spr., Syst. Veg. III: 850 (1826).—Prain in Kew Bull. 1918: 109.—Pojark. in Fl. URSS XIV: 291, Tab XVII-2 (1949).

Chrozophora tinctoria Aitchison (non Juss.) in Journ. Linn. Soc. XIX: 186 (1882), in T. L. S. n. III: 108.—Hooker f., F. B. I. V: 408 pro parte.

Chrozophora vervascifolia Juss. sensu Boiss., F. O. IV: 1141 pro parte.

Near Herat (July 7, 1955 K. Yamashita), Sarobi (June 18, 1955 S. K.).

Distr. Arabia, Asia Minor, Mesopotamia, Caucasus, Georgia, Egypt, Pam.-Al., Tianshan, Gorn.-Turkm., Kara-Kum., Kyz.-Kum., Iran, Afghanistan, Syria, Pakistan, NW. Himalaya.

Euphorbia aserbajdzhanica Borz. in Bull. Jar. Bot. Kieff, VII-VIII: 19 (1928).—Prokh. in Fl. URSS XIV: 470, Tab XXIII-4 (1949).

Lataband, Mullaomur (June 15, 1955 S. K.).

Distr. Caucasus, Iran, Gorn.-Turkm., Afghanistan.

Euphorbia caeladenia Boiss., Diag. Ser. II, VI: 81 (1844), F. O. IV: 1094.—Aitch., J. L. S. XIX: 185, T. L. S. n. III: 107.

Between Pulikhumri and Haibak (June 25, 1955 S. K.).

Distr. Afghanistan, Pakistan.

Euphorbia Chamaesyce L., Sp. Pl. 455 (1753).—Boiss., F. O. IV: 1088.—Aitch., J. L. S. XVIII: 92, T. L. S. n. III: 107.—Pojark. in Fl. URSS XIV: 488, Tab. XXV-2 (1949).

Between Mazarisharif and Herat (July, 1955 K. Yamashita).

Distr. Europe, Mediterranean Reg., Asia Minor, Caucasus, Iran, Afghanistan, Pakistan.

Our Afghan plants and those from Chaman, Pakistan are hirsute, while plants from Quetta, Pakistan is glabrous. The leaves are oblong.

Euphorbia densa Schrenk in Bull. Phys.-Math. Acad. Petérsb. III: 308 (1845).—Boiss., F. O. IV: 1091.—Aitch., T. L. S. n. III: 107.—Pojark. in Fl. URSS XIV: 473, Tab. XXIII-5 (1949).

Distr. Central Asia: Aralo-Kasp., Pribalx., Syr-Dar., Kyz.-Kum., Am.-Dar., Kara-Kum., Gorn.-Turkm., Iran, Afghanistan, Pakistan.

Euphorbia (Esula) **ecorniculata** Kitamura in Acta Phytotax. Geobot. XVII: 132 (1958). **Fig. 76.**

Perennis. Rhizoma obliquum lignescens. Caulis caespitosus erectus vel ascendens 10–20 cm altus striatus glaber, inferne 1.2–3 mm diametro, interdum basi

ramosus, ramis omnibus fertilibus, apice radiatim ramosus, radiis primariis 4, bis bifidis. Folia caulina alterna inferiora sensim minora, caulina media obovato-oblonga 15–20 mm longa 7.5–9 mm lata apice leviter emarginata vel rotundata mucronulata basi cuneato-angustata margine integra utrinque glabra, glaucoviridia, pinninervata, folia umbellaria 4, late elliptica 13–17 mm longa 10–14 mm lata apice rotundata basi cuneata, folia umbellularia 2, reniformia, folia floralia rhombico-reniformia 4–4.5 mm longa 5–5.5 mm lata apice mucronulata basi late cuneata. Involucrum breviter campanulatum 1.5 mm altum 2.5 mm latum extus intusque glabrum, apice 5-lobum, lobis ellipticis apice truncato-rotundatis ciliatis, glandulis 4, semilunatis ecorniculatis vel breviter corniculatis 1 mm longis 2 mm latis. Stipes fl. masc. demum 1 mm longus, minutissime sparse pilosus bracteolis paucis. Stipes fl. foem. basi minutissime dense pilosus, circ. 5 mm longus recurvus. Capsula ovata profunde trisulcata 4 mm longa 3.5 mm lata glabra. Stylus 1.2 mm longus basi ad 0.5 mm connatus, apice breviter bifidus. Semina oblonga 3 mm longa laevia.

Between Bulola and Doab (June 25, 1955 S. Kitamura) —Typus in Herb. Univ. Kyoto.

Distr. Afghanistan.

Euphorbia Emodi Hooker f., F. B. I. V : 250 (1887).

Euphorbia indica Aitch. et Hemsl. (non Lam.), J. L. S. XIX : 185 (1882).

Distr. Western Himalaya, Afghanistan (Kuram).

Euphorbia Esula L., Sp. Pl. 461 (1753).—Boiss., F. O. IV : 1125.—Hegi, Ill. Fl. V₁ : 170 (1925).—Pojark. in Fl. URSS XIV : 419 (1949).

Between Siyagird and Charikar (July 11, 1955 S. K.), Pagman near Kabul (July 15, 1955 S. K.)—foliis lanceolatis 7–8 cm longis utrinque glabris, caule circ. 100 cm alto.

Distr. Europe, Asia Minor, Iran, Afghanistan.

The Afghan plants have lanceolate leaves and may be distinguished as var. lanceolata.

Euphorbia falcata L., Sp. Pl. 456 (1753).—Boiss., F. O. IV : 1111.—Hooker f., F. B. I. V : 263.—Pojark. in Fl. URSS XIV : 469, Tab. XXIII-12 (1949).

Pagman near Kabul (July 15, 1955 S. K.).

Distr. Europe, Mediterranean Reg., Iran, Afghanistan, Pakistan, Caucasus, Central Asia : Tianshan, Syr-Dar., Pam.-Al., Amu-Dar., Gorn.-Turkm.

Euphorbia granulata Forsk., Fl. Aegypt. Arab : 94 (1775).—Boiss., F. O. IV : 1087.—Hooker f., F. B. I. V : 252.

β. **glabrata** Boiss. in DC., Prodr. XV, II : 34 (1862), F. O. VI : 1087 (1879).

Distr. Medit. Reg., Arabia, Afghanistan, Pakistan.

Euphorbia Helioscopia L., Sp. Pl. 459 (1753).—Boiss., F. O. IV : 1107 (1879).—Aitch., T. L. S. n. III : 107.—Hooker f., F. B. I. V : 262 (1887).—Bornm. in Engler, Bot. Jahrb. LXVI : 243 (1934).—Pajark. in Fl. URSS XIV : 383.

Kandahar (June 8, 1955 S. K.).

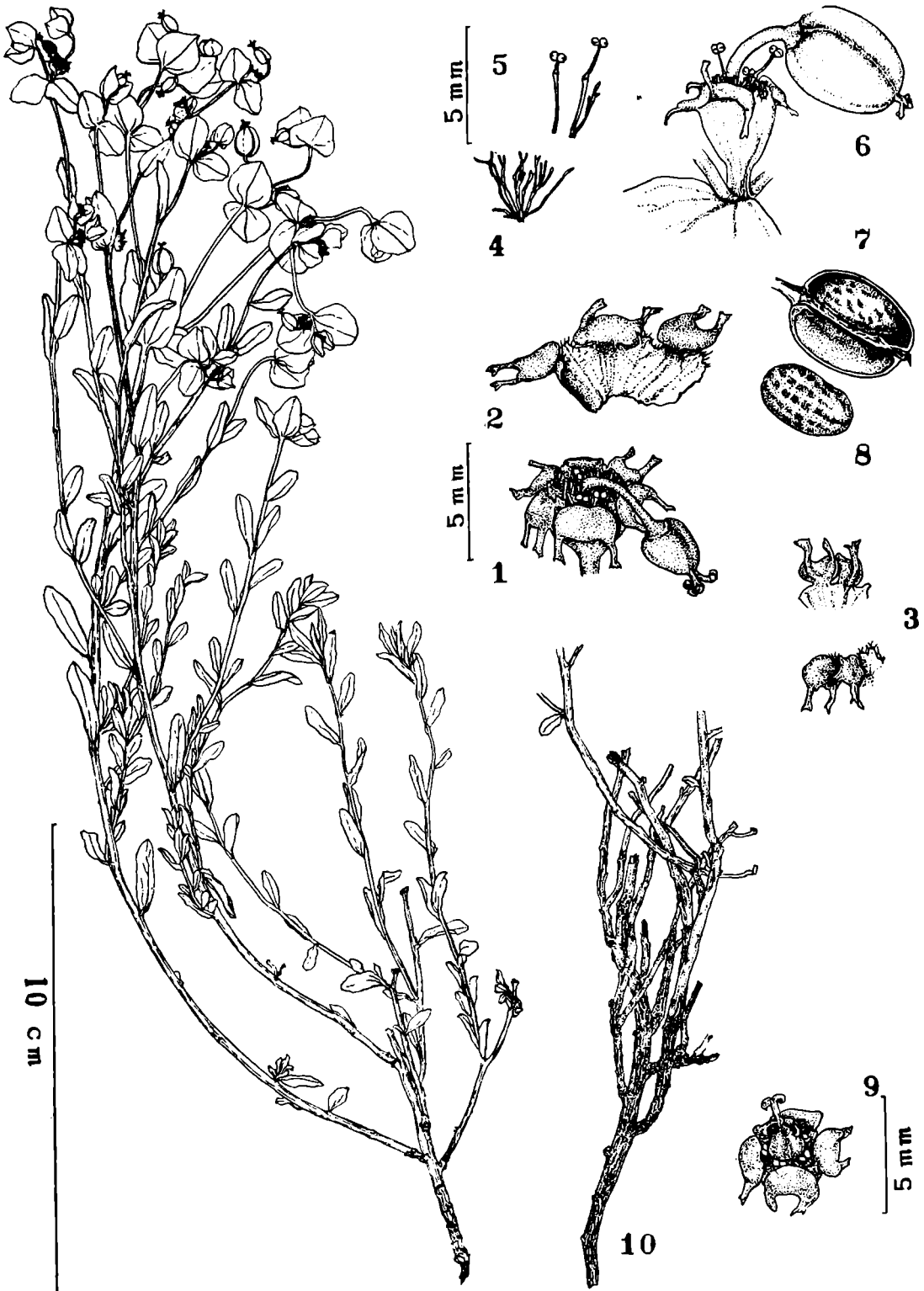


Fig. 77. *Euphorbia longecorniculata* Kitam.: 1 Inflorescence, 2 Involucre with Nectaries, 3 Nectaries, 4 Bracteoles, 5 Male Flower, 6 Capsule, 7 Vertical section of Capsule, 8 Seed, 9 Inflorescens, 10 Lower part of Plant. (Ghunoy neary Sarobi).

Distr. Eurasia, from England to Japan, Northern Africa.

Euphorbia indica Lam., Encycl. Bot. II: 423 (1786).— Boiss., F. O. IV: 1086 (1879).—Pjark. in Fl. URSS XIV: 486 (1947).

Euphorbia hypericifolia sensu Hooker f., F. B. I. V: 249 (1886).

Eastern Prov. Kandai (July 27, 1955 S. K.).

Distr. India, Pakistan, Afghanistan, Caucasus, Arabia, Africa.

Euphorbia (Esula) **longecorniculata** Kitamura in Acta Phytotax. Geobot. XVII: 133. Fig. 77.

Perennis glauca glabra. Rhizoma lignescens perpendiculare vel obliquum. Caulis 20–30 cm altus caespitosus ascendens flavo-viridescens inferne 1–1.5 mm diametro dense foliatus, internodiis foliis brevioribus, ex axillis foliorum alternatorum, ramis divaricato-ascendentibus, omnibus floriferis. Folia caulina inferiora deorsum minora, caulina media alterna plerumque oblongo-linearia 15–21 mm longa 4–5.5 mm lata apice obtusa mucronulata basi rotundata sessilia non amplexicaulia, margine sub lente irregulariter denticulata utrinque glabra chartacea, nervis obsoletis. Radius umbellae 2–3, rarius bifidus, folia umbellae late ovata 10–14 mm longa et lata apice obtusa mucronulata basi leviter cordata margine sub lente irregulariter denticulata, folia floralia late ovata 7 mm longa et lata. Involucrum breviter campanulatum 2.5 mm altum 3 mm in diametro, extus glaber, intus praeter lobos puberulos glaber, lobis oblongis 0.8 mm longis apice truncatis bilobis minute ciliolatis, glandulis saepe 4, rarius 6, hemisphaericis 2 mm latis 1.2 mm longis, bicorniculatis, corniculis flavis 1.2 mm longis dilatatis incis, inter corniculis truncatis integris vel dentatis. Stipes fl. masc. 2.2 mm longus glaber, bracteolis copiosis laceratis. Stylus 1 mm longus basi ad 0.4 mm connatus apice dilatatus breviter bifidus. Capsula ovata glabra glauco-viridia 6 mm longa 5 mm lata trisulcata, lobis rotundatis. Semina oblonga 3.4 mm longa 2.2 mm lata foveolata glabra glauco-cinerea vel glauco-brunnea, caruncula breviter conica 0.7 mm longa 1 mm lata.

Ghunoy near Sarobi (June 15, 1955 S. Kitamura)—Typus in Herb. Univ. Kyoto.

Distr. Afghanistan.

This species is characterized by the branches springing from the axils of the upper alternate leaves. The leaves are irregularly denticulated on the margin. The horns of the nectary are branching like those of the deer. The nerves of the cauline leaves are not distinct and obscurely three nerved. This species may be referred to the Section Murtekias.

Euphorbia megalantha Boiss., Diag. Ser. I, VII: 95 (1846), F. O. IV: 1093 (1879).—Bornm. in Engler, Bot. Jahrb. LXVI: 243 (1934).

β. **gracilis** Boiss., F. O. IV: 1094.

E. heteradenia Jaub. et Spach, Ill. Pl. Or. II t. 131 (1844–46).

Between Bulola and Doab (June 25, 1955 S. K.).

Distr. Iran, Afghanistan.

Euphorbia osyridea Boiss., Diag. Ser. I, VII: 87 (1846), F. O. IV: 1092.—Aitch.,

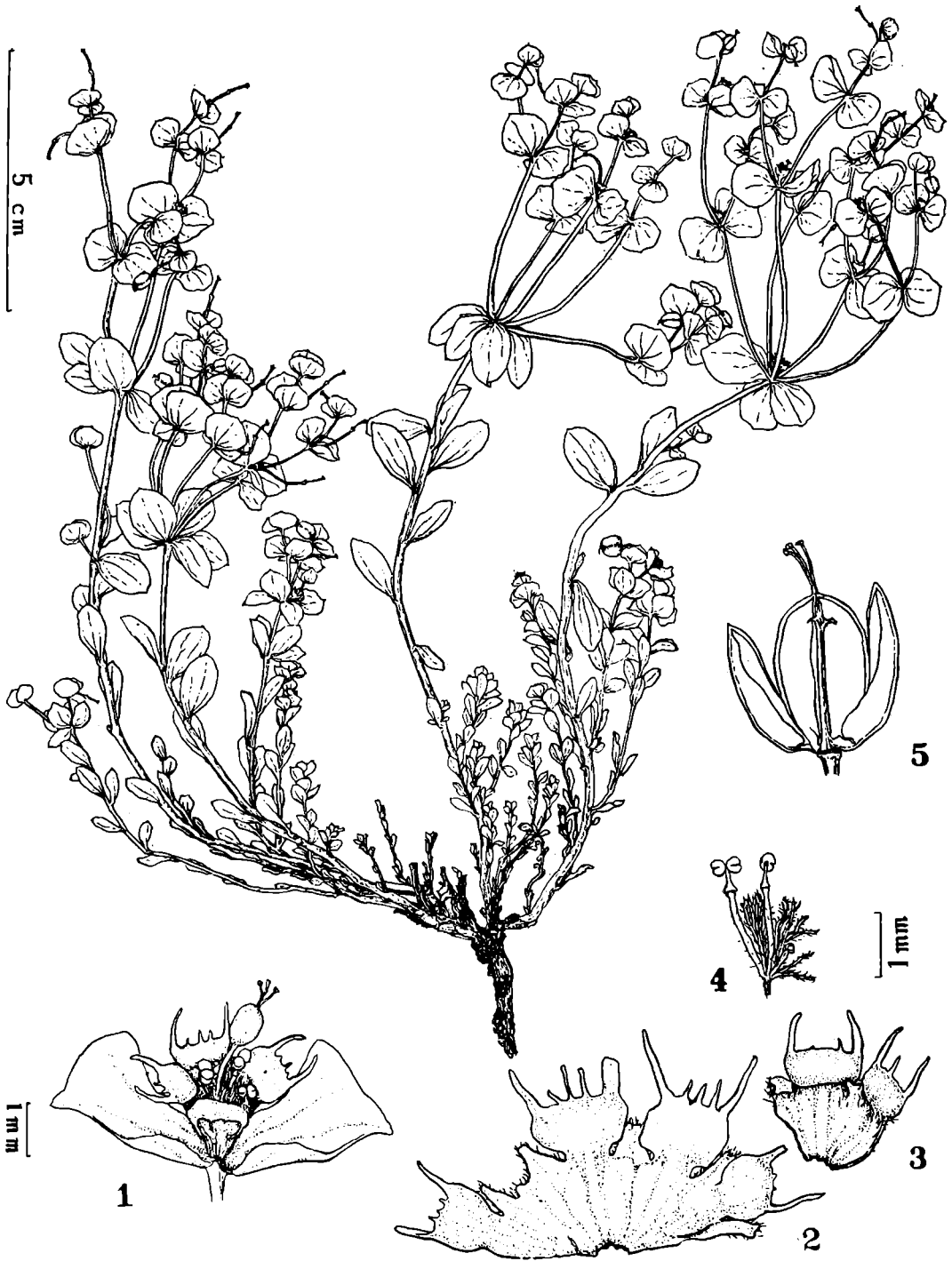


Fig. 78. *Euphorbia quinquerradiata* Kitam.: 1 Inflorescence, 2 and 3 Involucres with Nectaries, 4 Male Flowers, 5 Capsule. (Pagman near Kabul).

T. L. S. n. III: 107.

E. lateriflora Jaub. et Spach, Ill. Pl. Or. II: t. 130 (1844-6).

Distr. Iran, Afghanistan.

Euphorbia (Esula) **quinqueradiata** Kitamura in Acta Phytotax. Geobot. XVII: 134 (1958). **Fig. 78.**

Perennis glabra glauca. Rhizoma obliquum. Caulis caespitosus, ascendens 13-15 cm altus striatus glaber, inferne 1-1.5 mm diametro, purpurascens, interdum basi ramosus, ramis omnibus fertilibus, apice radiatim ramosus, radiis plerumque 5, rarius 2-4, bis bifidis. Folia caulina alterna basim versus sensim minora oblanceolato-oblonga squamiformia, caulina media obovato- vel oblanceolato-oblonga 13-17 mm longa 5-7 cm lata apice rotundata mucronulata basi cuneata margine integra utrinque glabra obscure pinninervata. Folia umbellae plerumque 5, rarius 2-4, ovato-elliptica apice rotundata basi truncato-rotundata 11-17 mm longa 8-13 mm lata margine integra, folia floralia depresso-rhomboidea 5 mm longa 6 mm lata. Involucrum breviter aperte campanulatum 2 mm longum 2.5 mm latum, extus intusque glaber, lobis ovatis ciliatis, glandulis 4, depresso-quadratis 1 mm longis 1.5 mm latis, bicorniculatus, corniculis 1 mm longis, interdum bifidis, inter corniculis corniculatis, dentatis vel integris. Stipes fl. masc. demum 2 mm longus, bracteolis numerosis laceratis. Stipes fl. foem. demum 9 mm longus sub lente sparse pilosus. Capsula ovato-elliptica 3 mm longa 3 mm lata profunde trisulcata glabra. Stylus 1.3 mm longus basi ad 0.3 mm connatus apice profunde bifidus. Semina oblonga 3 mm longa 1.5 mm lata grisea rugosa longitudinaliter sulcata transverse striata, caruncula 0.4 mm alta 0.9 mm lata.

Pagman near Kabul (July 15, 1955 S. Kitamura)—Typus in Herb. Univ. Kyoto.

Distr. Afghanistan.

Euphorbia rosea Retz., Obs. IV: 26 (1779-91).—Boiss., Euphorb. Ic. t. 21, in DC., Prodr. XV, II: 50 (1862).—Hooker f., F. B. I. V: 251 (1887).

Distr. Afghanistan (acc. to Hooker f.), India.

Euphorbia sanguinea Hochst. et Steud. in Schimp. exs. ex Boiss. in DC., Prodr. XV, II: 35 (1862) non Hort. Berol. ex Klotzsch & Garcke (1860), F. O. IV: 1088 (1879).

Boissier reported this Arabian species from Kabul region, consulting the specimen collected by Griffith.

Euphorbia Seguieriana Neck. in Acta Akad. Theod. Pal. II: 493 (1770).—Hegi, Ill. Fl. V₁: 177, t. 178-4 (1925).—Pojark., l. c. 395 (1949).

Euphorbia Gerardiana Jacq., Fl. Austr. V: 17 (1778).—Boiss., F. O. IV: 1124.—Aitch., J. L. S. XVIII: 93 (1880) cum?

Distr. Europe, Caucasus, Western Siberia, Central Asia: Aralo-Kasp., Pribalx., Kyz.-Kum., Gorn.-Turkm, Iran, Afghanistan.

Euphorbia Stocksiana Boiss., Cent. Euph. 34 (1860), F. O. IV: 1094 (1879).

Distr. Iran, Afghanistan, Pakistan.

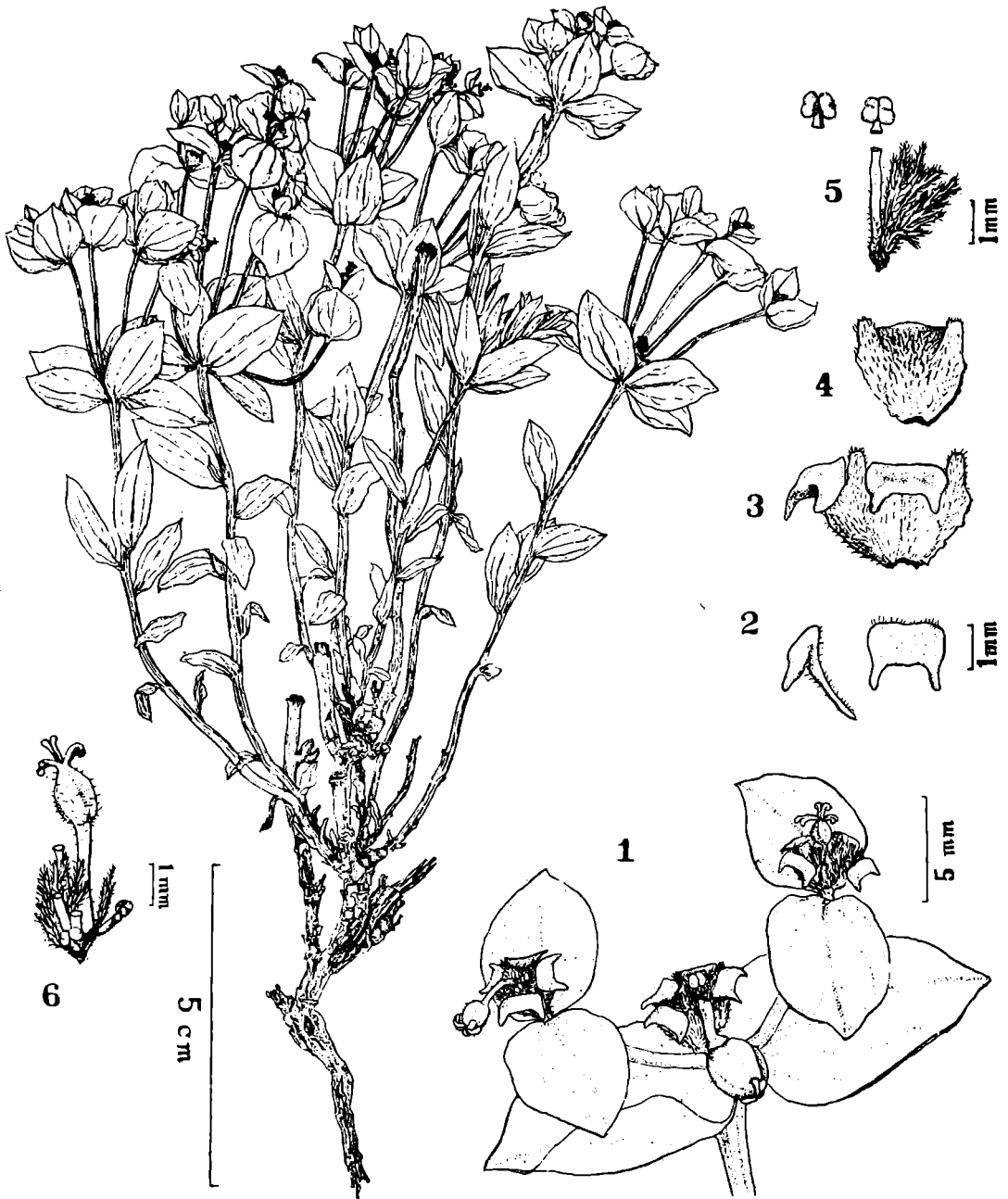


Fig. 79. *Euphorbia Yamashitae* Kitam.: 1 Inflorescence, 2 Nectaries, 3 Involucre with Nectaries, 4 Inner side of Involucre, 5 Male Flower, 6 Female Flower. (Zarmast Pass).

Euphorbia Szovitsii Fischer et Meyer, Ind. Sem. Horti Petrop. I: 27 (1835).—Boiss., F. O. IV: 1113.—Aitch., J. L. S. XVIII: 93 (1880), T. L. S. n. III: 107 (1888).—Pojark. in Fl. URSS XIV: 474 (1949).

Distr. Asia Minor, Caucasus, Armenia, Syria, Iran, Afghanistan, Pamiro-Al., Gorn.-Turkm.

Euphorbia Thomsoniana Boiss. in DC., Prodr. XV, II: 113 (1862).—Aitch., J. L. S. XIX: 186.—Hooker f., F. B. I. V: 260.

Distr. Afghanistan (Kuram), Pakistan.

Euphorbia turcomanica Boiss., Cent. Euph. 13 (1860), in DC., Prodr. XV, II: 34 (1862), F. O. IV: 1087.—Aitch., T. L. S. n. III: 107.—Pojark. in Fl. URSS XIV: 492, Tab. XXVI, fig. 3 (1949).

Distr. Iran, Afghanistan (W), Caucasus, Central Asia: Aralo-Kasp., Tianshan, Syr-Dar., Pamiro-Al., Amu-Dar., Kyz.-Kum., Kara-Kum., Gorn.-Turkm.

Euphorbia Wallichiana Hooker f., F. B. I. V: 258 (1887).

Euphorbia no. 380 Aitch., J. L. S. XVIII: 93 (1880).

Distr. Afghanistan (Kuram), Himalaya: from Kashmir to Nepal.

Euphorbia (Murtekias) **Yamashitae** Kitamura in Acta Phytotax. Geobot. XVII: 134 (1958). **Fig. 79.**

Perennis glabra flavo-viridescens. Rhizoma ramosum lignescens. Caulis caespitosus erectus vel ascendens omnes floriferus, 10–12 cm altus sulcato-striatus plus minus flexuosus glaber inferne 1.5–2 mm diametro leviter purpurascens apice radiatim ramosus, radiis plerumque 5, rarius 4, simplicibus vel interdum bifidis. Folia caulina alterna approximativ disposita, internodiis brevioribus, inferiora minora, media oblonga vel elliptico-oblonga 16–21 mm longa apice acuta mucronulata basi rotundata sessilia non amplexicaulia, margine integra utrinque glabra, palmatim trinervata, textura crassiuscula. Folia umbellaria elliptica 13–18 mm longa 8–13 mm lata apice acuta basi rotundata palmatim 5-nervata utrinque glabra, folia floralia ovata vel ovato-orbicularia, 5–9 mm longa, 6–9 mm lata apice obtusa mucronulata basi rotundata vel leviter cordata. Involucrum hemisphaericum 2 mm altum 3–4 mm latum extus et intus dense pubescens, lobis oblongis flavescentibus 0.5 mm longis pubescentibus, glandulis 4, semilunatis 1.5 mm latis, corniculis 2, clavatis flavis 0.5 mm longis divaricativ dispositis inter corniculis integris. Stipes fl. masc. 2 mm longus, bracteolis numerosis laceratis minute pubescentibus. Ovarium primum minute puberulum, stylus vix 1 mm longus e basi liber apice breviter bifidus, demum valde recurvus. Capsula immatura ovata 3.5 mm longa 3 mm lata. Semina immatura laevia 2.5 mm longa 1.7 mm lata, caruncula 1 mm lata 0.5 mm alta.

Zarmast Pass (July 5, 1955 K. Yamashita)—Typus in Herb. Univ. Kyoto.

Distr. Afghanistan.

Ricinus communis L., Sp. Pl. 1007 (1753).—Aitch., J. L. S. XIX: 186, T. L. S. n. III 107.

Distr. Cultivated in Afghanistan, said to be a native of Africa. According to Aitchison the native name is Baz-anjir or Buz-anjir. Sometimes naturalized. The oil extracted from its seeds, is used for burning. The leaves are employed as poultices.

Anacardiaceae

Cotinus Coggygia Scop., Fl. Carniol. 2 ed. I: 220 (1772).—Rehder and Wilson in Sargent, Pl. Wilson. II: 175 (1914).—Hegi, Ill. Fl. V₁: 226, Fig. 1821, 1822 (1925).—Lincz. in Fl. URSS XIV: 526.

Rhus Cotinus L., Sp. Pl. 267 (1753).—Aitch., J. L. S. XVIII: 42.

Distr. Southern Europe, Caucasus, Asia Minor, Arm.-Kurd., Iran, Pakistan (Kuram), Himalaya: from Marri to Kumaon, China.

Pistacia Kinjuk Stocks in Hook., Kew Journ. IV: 143 (1852).—Boiss., F. O. II: 6.

Pistacia integerrima Stewart in Brandis, For. Fl. 122, t. XXII (1874).—Hooker f., F. B. I. II: 13.—Aitch., J. L. S. XVIII: 42.

Nuristan: Between Seprigal and Voma (July 29, 1955 S. K.).

Distr. W. Himalaya to Kumaon, Pakistan, Afghanistan, Iran, Egypt.

β. **populifolia** Boiss., F. O. II: 7.

Distr. Afghanistan (W).

Pistacia mutica Fischer et Mey. in Hohenack., Enum. pl. Talysch. 102 (1837).—Boiss., F. O. II: 7.—Lincz. in Fl. URSS XIV: 524, Tab. XXVII-2 (1949).

Pistacia cabulica Stocks in Hook., Kew Journ. IV: 143 (1852).—Boiss., F. O. II: 7.—Aitch., J. L. S. XVIII: 42.

Pistacia Terebinthus var. *mutica* Aitch. et Hemsl., T. L. S. n. III: 47. p. p.

Between Doab and Talao-Barfak (June 26, 1955 S. K.), Doab (July 10, 1955 S. K.).

Distr. Eastern Mediterranean Region, Arm.-Kurd., Iran, Krym., Caucasus, Afghanistan, Pakistan: Quetta in Preserved forest (May 27, 1955 S. K.).

Pistacia vera L., Sp. Pl. 1025 (1753).—Boiss., F. O. II: 5.—Aitch., T. L. S. n. III: 47.—Lincz. in Fl. URSS XIV: 520, Tab. XXVII-1 (1949).

Between Pulikhumri and Haibak (June 27, 1955 S. K.)—wild.

Distr. Central Asia, Iran, Afghanistan.

The native name in Afghanistan is Pista (according to Aitchison). The seeds are sold at the markets.

Schinus Molle L., Sp. Pl. 388 (1753).

Jalalabad cultivated as a street tree (July 26, 1955 S. K.)—fr., Kandahar (June 6, 1955 S. K.)—fl.

Distr. A native of Tropical America.

A beautiful tree with the imparipinnate leaves and the numerous small rosy fruits.

Celastraceae

Gymnosporia senegalensis (L.) Loes. in Bull. Herb. Boiss IV: 430 (1896).

Celastrus senegalensis Lam., Encyc. I: 661 (1784).—Boiss., F. O. II: 11.

Gymnosporia montana Benth., Fl. Austr. I: 400 (1863).—Hooker f., F. B. I. I: 621.—Kirtikar & Basu, Indian Med. Pl. Pl. 236.

Catha montana G. Don, Gen. Syst. II: 10 (1832). Wight, Ic. 382.

Distr. India, Pakistan, Afghanistan, Africa, Malaya, Australia.

Gymnosporia Royleana Lawson, F. B. I. I: 620.

Celastrus spinosus Royle, Ill. Himal. Mount. 157 (1835).—Boiss., F. O. II: 11.

Gymnosporia spinosus Hooker f. ex Boiss., F. O. II: 11 pro syn. non Merrill.

Distr. Afghanistan, Pakistan, Himalaya; Kumaon, Garwal.

Euonymus fimbriata Wall. in Roxb., Fl. Ind. II: 408 (1824).—Hooker f., F. B. I. I: 611.—Aitch., J. L. S. XVIII: 40.

Distr. Afghanistan (Kuram), Himalaya: from Kumaon to Sikkim.

Aceraceae

Acer cappadocicum Gleditsch in Schrift. Ges. Naturf. Fr. Berlin VI: 116, t. 2 (1785).—Rehder in Sargent, Pl. Wilson. I: 84 (1911).

Acer laetum C. A. Mey., Verz. Kauk. Pflanz. 206 (1831).—Pojark. in Fl. URSS XIV: 591 (1949).

var. **indicum** Rehder in Sargent, Pl. Wilson. I: 76 (1911).—Kitamura in Fauna and Flora of Nepal Himalaya 174 (1955).—Momotani in Acta Phytotax. Geobot. XVI: 162, pl. 1 (1956).

Nuristan: Between Chatrass and Budigrah 2150 m alt. (Aug. 2, 1955 S. K.).

Distr. var. Iran, Afghanistan, Himalaya: from Kashmir to Bhutan.

Acer pubescens Franchet in Ann. Sc. Nat. 6 sér. XV: 246 (1883).—Pax in Pflanzenreich Heft 8: 60 (1902).—Pojark. in Fl. URSS XIV: 594, Tab. XXXI-5 (1949).

Acer monspessulanum Kitamura (non L.) in Acta Phytotax. Geobot. XVI: 97 (1956).

Acer monspessulanum var. *pubescens* Wesmael in Bull. Soc. Bot. Belg. XXIX: 50 (1890).

Nuristan: Between Chatrass and Budigrah (Aug. 2, 1955 S. K.).

Distr. Afghanistan (Nuristan), Pamiro-Al.

Petioles 3–4 cm long sparsely pubescent. Leaves 3–5 cm long 3–7 cm broad sparsely pilose above, and densely pubescent beneath.

Sapindaceae

Dodonaea viscosa Jacq., Enum. Pl. Carib. 19.—Linn., Mant. 228 (1771).—Boiss., F. O. I: 953.—Hiern., F. B. I. I: 697.—Aitch., J. L. S. XVIII: 41.

Eastern Prov.: Between Kandai and Monogai (Aug. 15, 1955 S. K.).

Distr. Pantropic.

In the rocky places of the subtropical region along Pech river, this species is common. The shrub has spatulate viscid leaves, and winged fruits.

Stocksia Brahuica Benth. in Hooker, Kew Jour. V : 305 (1853).—Boiss., F. O. I : 946.—Oliver in Hooker, Ic. Pl. 1724 (1887).

Distr. Afghanistan, Pakistan : Chaman (June 2, 1955 S. K.), Chaman Pass 1490 m (May 31, 1955 S. K.).

A spinous shrub, with very curious fruits.

Balsaminaceae

Impatiens amphorata Edgew. in T. L. S. XX : 39 (1846).—Hooker f., F. B. I. I : 475.—Aitch., J. L. S. XIX : 155. Bot. Mag. t. 6550.

Distr. Afghanistan (Kuram), Pakistan, Himalaya : from Kashmir to Kumaon.

Impatiens brachycentra Kar. et Kir. in Bull. Soc. Nat. Mosc. XV : 179 (1842).—Hooker f., F. B. I. I : 481.—Aitch., J. L. S. XIX : 155.—Toppin in Kew Bull. 1920 : 349.—Pobed. in Fl. URSS XIV : 632, Tab. 33-1.

Nuristan : Trokikori (Aug. 1, 1955 S. K.).

Distr. Dz.-Tarb., Tianshan, Dz.-Kashg., Afghanistan (E), Pakistan, Himalaya : from Kunawar to Marri.

Impatiens Lemanni Hooker f. et Thoms. in Journ. Linn. Soc. IV : 154 (1860).—Boiss., F. O. I : 868.—Aitch., J. L. S. XIX : 155.—Toppin in Kew Bull. 1920 : 348.

Nuristan : Between Voma and Chatrass (Aug. 1, 1955 S. K.).

Distr. Afghanistan.

Rhamnaceae

Berchemia lineata DC., Prodr. II : 23 (1825).—Lawson, F. B. I. I : 638.—Aitch., J. L. S. XVIII : 40.—Kitamura, Fauna and Flora of Nepal Himalaya 176 (1955).

Distr. Pakistan, Himalaya : from Indus to Sikkim, China, Indo-China, Ryukiu.

Rhamnus afghanica Grub. in Fl. et Syst. VIII : 348 (1949) nom. seminudum, in Notulae Systematicae ex Herb. Kom. XII : 130, fig. 1 (1950).

Distr. Afghanistan (E).

Rhamnus horridissima Bornm. in Engler, Bot. Jahrb. LXVI : 223 (1934).

Distr. Afghanistan at Pakistan frontier.

This species was described from a specimen without fl. and fr. Grubov treated this under *Sageretia* as *S. horridissima* (Bornm.) Grubov in Fl. et Syst. VIII : 373 (1949).

Rhamnus minuta Grub. in Fl. URSS XIV : 673 (1949), in Not. Syst. Herb. Kom. XII : 131, fig. 2 (1950).—Wendelbo in Nytt Mag. Bot. I : 45 (1952).

Nuristan : Between Pushuki and Kushitaki (Aug. 4, 1955 S. K.).

Distr. Afghanistan, Pakistan, Pamiro-Alai.

Rhamnus prostrata Jacquem. in Journ. II: 346 (1841) nomen.—Parker in Kew Bull. 1921: 217.—Grub. in Fl. et Syst. VIII: 348 (1949).

Rhamnus persica Lawson in F. B. I. I: 638.—Aitch., J. L. S. XVIII: 40.

Distr. Afghanistan (Kuram), Pakistan, Himalaya: from Thelm to Garwal.

Rhamnus purpureus Edgew. in T. L. S. XX: 44 (1846).—Aitch., J. L. S. XVIII: 41.—Grub. in Fl. et Syst. VIII: 290, Tab. V-2 (1949).—Kitamura, l. c. 177.

Distr. Pakistan from Afghan frontier, Himalaya: from Marri to Nepal.

Rhamnus virgatus Roxb., Fl. Ind. II: 351 (1824).—Grub. in Fl. et Syst. VIII: 325, Tab. VII-3 (1949).—Kitamura, l. c. p. 177 (1955).

Rhamnus dahuricus sensu Lawson (non Pall.), F. B. I. I: 639.—Aitch., J. L. S. XVIII: 41.

Distr. Pakistan from Afghan frontier through Himalaya, eastwards to China: Yunnan, Szechuan.

Sageretia Brandrethiana Aitch., J. L. S. XVIII: 62 (1865), J. L. S. XIX: 156.—Boiss., F. O. II: 22.—Lawson in F. B. I. I: 642.

Distr. Pakistan, Afghanistan, Iran, Arabia.

Sageretia theezans Brongn. in Ann. Sc. Nat. Sér. I, X: 359, t. 13, f. 2 (1827).—Lawson, F. B. I. I: 641.—Ohwi, Fl. Jap. 757 (1953).—Hara, Enum. Sp. Jap. III: 130 (1954).

var. **glabrescens** Kitamura var. nov.

Inflorescentia modeste pilosa. Calyx glabrescens.

Nuristan: Between Voma and Trokikorl (July 31, 1955 S. Kitamura)—Typus in Herb. Kyoto University, between Kandai and Seprigal (July 28, 1955 S. K.).

Distr. sp. Afghanistan (var. *glabrescens*), Pakistan (var. *glabrescens*), Himalaya: from Kashmir to Simula, China, Formosa, Philippines, Ryukiu, Kiushiu, Quelpaert.

As compared with the Eastern Asiatic specimens, the specimens from Afghanistan and Pakistan have glabrous calices and moderately pilose branches. The leaves are glabrous beneath. This is very abundant in the warm temperate or subtropical zone of Nuristan.

Zizyphus Jujuba Miller, Gard. Dict. ed. 8 (1768).—Rehder, Manual 2 ed. 596 (1940).—Kitamura in Acta Phytotax. Geobot. XIV: 84 (1951).—Grub. in Fl. URSS XIV: 637, Tab. XXXIV-3 (1949).

Z. vulgaris Lam., Tabl. Encycl. Ill. II: 330 (1793).—Aitch., J. L. S. XVIII: 40, T. L. S. n. III: 46.—Boiss., F. O. II: 12.—Lawson in F. B. I. I: 633.

Eastern Prov. Kandai (July 27, 1955 S. K.), Nuristan: Between Kandai and Seprigal (July 28, 1955 S. K.), Voma (July 30, 1955 S. K.).

Distr. Greece, Asia Minor, Caucasus, Iran, Central Asia: Kara-Kum., Gorn.-Turkm., Syr-Dar., Pam.-Al., Tianshan, Dz.-Tarb., Afghanistan, Pakistan, Dz.-Kashg., Mongolia, Tibet, China.

The fruits are very small. The branches spiny. The native name in Afghanistan

is Anab according to Aitchison. The writer heard as Onab in Nuristan. He bought fruits in the markets. The native name was Sinzed in a fruit shop of Mazarisharif.

It is very difficult to decide the native place of this species. In China, Jujub was already referred to in Siking (compiled about 2500 years ago). The wild spiny plants is not uncommon.

Now this is widely distributed from North China to Southeast Europe. In Nuristan this is wild in the warm temperate and the subtropical regions.

In Japan *Z. Jujuba* is not naturalized though it has been cultivated in Japan through many centuries, because of the humid climate.

Zizyphus mauritiana Lamarck, Encycl. Méth. Bot. III: 319 (1789).

Zizyphus Jujuba Lamarck (non Miller), l. c. 318 (1789).—Boiss., F. O. II: 13.—Lawson, F. B. I. I: 632.

Distr. Tropical Africa, Afghanistan, Pakistan, India, China, Malaya, Australia.

Zizyphus nummularia Wight & Arnot, Prodr. 162 (1834).—Boiss., F. O. II: 13.—Aitch., J. L. S. XIX: 155.—Lawson, l. c. 633.

Distr. Pakistan (Kuram), India.

Zizyphus oxyphylla Edgew. in T. L. S. XX: 43 (1846).—Aitch., J. L. S. XIX: 156.

Distr. Pakistan (Kuram), Himalaya: Sirmor, Garwal.

Zizyphus Spina-Christi Willd., Sp. Pl. I: 1105 (1798).—Boiss., F. O. II: 13.

Distr. North Africa, Arabia, Iran, Afghanistan.

Vitaceae

Ampelopsis vitifolia (Boiss.) Planchon in A. & A. de Candolle, Monogr. Phan. V: 454 (1887).—Rehder, Manual 2 ed. 616 (1940).—Sosnovski in Fl. URSS XIV: 705 (1949).

Vitis persica Boiss., F. O. I: 955.—Schneider, Ill. Handb. Laubh. II: Fig. 213 k-l. Kandahar (June 8, 1955 S. K.), between Doab and Shibar (July 10, 1955 S. K.). Distr. Pamiro-Al., Afghanistan, Pakistan, Iran.

Vitis vinifera L., Sp. Pl. 293 (1753).—Boiss., F. O. I: 955.—Aitch., J. L. S. XVIII: 41, T. L. S. n. III: 46.

Vitis silvestris Gmel., Fl. Bad. I: 543 (1805).—Sosnovski in Fl. URSS XIV: 697, Tab. 39-1 (1949).

Nuristan: Between Seprigal and Voma (July 29, 1955 S. K.)—not cultivated.

Distr. Europe, Asia Minor, Arm.—Kurd., Iran, Caucasus, Gorn.—Turkm., Afghanistan.

This species is largely cultivated in Afghanistan. There are many cultivated forms in Afghanistan. The native name for *V. vinifera* is Tak. The fruit is called Angur. The dry fruits are called Kishu-mish, and are exported to India.

Tiliaceae

Corchorus Anticosus Raeusch., Nomencl. Bot. ed. III 158 (1797).—Boiss., F. O. I: 846.—T. Masters, F. B. I. I: 398. Wight, Ic. 1073.

Distr. India, Pakistan, Afghanistan, Arabia, Africa.

Corchorus olitorius L., Sp. Pl. 529 (1753).—T. Masters, F. B. I. I: 397.—Aitch., J. L. S. XVIII: 155. Bot. Mag. t. 2810.

Distr. India, Pakistan (Kuram).

Corchorus trilocularis L., Mant. 77 (1767).—Masters, F. B. I. I: 397.—Aitch., J. L. S. XVIII: 155.

Distr. India, Pakistan (Kuram), Tropical Africa.

Grewia populifolia Vahl, Symb. Bot. I: 33 (1790).—T. Masters, F. B. I. I: 385.—Aitch., J. L. S. XIX: 154.—Trimen, Handb. Fl. Cey. Atlas I, t. 18 (1893).—Engler & Drude, Veg. Erde IX, 1, 1: 70 (1910).

Distr. India, Pakistan (Kuram), Karachi (May 19, 1955 S. K.), Arabia, Africa.

Grewia salvifolia Heyne in Roth, Nov. Sp. 239 (1821).—T. Masters, F. B. I. I: 386.—Aitch., J. L. S. XIX: 154.—Talbot, For. Fl. Bombay I: 159 (1909).

Distr. India, Pakistan (Kuram), Africa.

Grewia villosa Willd. in Nov. Act. Nat. Cur. Berol. 205 (1803).—Hooker, Comp. Bot. Mag. I, t. 10 (1835).—Masters, F. B. I. I: 388.—Aitch., J. L. S. XIX: 155. Kirtikar & Basu, Ind. Med. Pl. t. 151, 158.

Distr. India, Pakistan (Kuram), Africa.

Malvaceae

Abutilon Theophrasti Medic., Malv. 28 (1787).—Baker in Journ. of Bot. XXXI: 214.—Iljin, Fl. URSS XV: 147 (1949).

Abutilon Avicennae Gaertn., De Fruct. et Sem. II: 251 (1791).—Boiss., F. O. I: 836 (1867).—Reich., Ic. V: t. CLXVI no. 4832.—Aitch., J. L. S. XIX: 154 (1882).—Masters in F. B. I. I: 327 (1874).

Distr. Afghanistan (Kuram), Pakistan, India, Central Asia, Caucasus, Asia Minor, Europe, North Africa, Iran.

Abutilon bidentatum Hochst. in A. Richard, Fl. Abyss. I: 68 (1847).—Aitch., J. L. S. XIX: 154 (1882).—Masters in F. B. I. I: 326 (1874).

Distr. Pakistan (Kuram), India, Arabia, Tropical Africa.

Abutilon muticum G. Don, Gen Syst. I: 502 (1831).—Boiss., F. O. I: 836 (1867).—Masters in F. B. I. I: 327 (1874).

Distr. India, Pakistan, Afghanistan, Iran, Palestine, Arabia, Egypt, Trop. Africa.

Althaea Aucheri Boiss., Diag. Ser. I, VI: 28 (1845).

Alcea Aucheri Boiss., F. O. I: 826 (1867).

Kandahar (June 7, 1955 S. K.).

Distr. Iran, Afghanistan.

Very abundant around a cemetery. The plant smells very bad.

Althaea Hohenackeri Boiss. et Huet, Diagn. Ser. II, V: 67 (1856).—Aitch., T. L. S. n. III: 43.

Alcea Hohenackeri Boiss., F. O. I: 833 (1867).

Alcea lenkoranica Iljin in Zam. po sist. r. Bot. inst. AN Gruz. SSR XV: 40 (1949), in Fl. URSS XV: 96 (1949).

Distr. Caucasus, Iran, Afghanistan.

Althaea lavateraeflora DC., Prodr. I: 437 (1824).—Aitch., T. L. S. n. III: 43.

Alcea lavateraeflora Boiss., F. O. I: 828 (1867).

Distr. Palestine, Syria, Afghanistan (cult.).

Althaea officinalis L., Sp. Pl. 686 (1753).—Boiss., F. O. I: 825 (1867).—Masters in F. B. I. I: 319.—Aitch., J. L. S. XVIII: 39, T. L. S. n. III: 43.—Iljin in Fl. URSS XV: 131 (1949).

Distr. Afghanistan, Pakistan, Iran, Central Asia, Siberia, Caucasus, Europe.

Althaea rhyticarpa Trautv. in Bull. Soc. Nat. Mosc. XXXIII: 454 (1860).

Alcea sulphurea *β. microchiton* Boiss., F. O. I: 827 (1867) p. p.—Baker in Journ. of Bot. XXVIII: 142 (1890).

Alcea rhyticarpa (Trautv.) Iljin in Fl. URSS XV: 115 (1949).

Between Pulikhumri and Haibak (June 27, 1955 S. K.).

Distr. Iran, Afghanistan, Pribalxash, Syr-Dar., Amu-Dar., Kyz.-Kum., Gorn.-Turkm., Dz.-Kashg.

A very beautiful plant growing along the roadside.

Althaea rosea Cav., Diss. II: 91 (1790).—Bot. Mag. t. 3198.—Reich., Ic. Fl. Germ. V: tab. CLXXV (1841).—Aitch., J. L. S. XVIII: 39.—Baker in Journ. Bot. XXVIII: 207 (1890).

Alcea rosea L., Sp. Pl. 687 (1753).—Boiss., F. O. I: 831 (1867).—Iljin in Fl. URSS XV: 126 (1949).

Between Shibar and Chardi-i-Ghorband (July 11, 1955 S. K.).

Distr. Med. Region (Crete, Greece, Peloponesus).

The Afghan plant has smaller flowers. The leaves are more densely hairy. This plant may be escaped from a garden.

Hibiscus Syriacus L., Sp. Pl. 695 (1753).—Reich., Ic. V: t. CLXXXI, f. 4862.—Masters in F. B. I. I: 344 (1875).—Boiss., F. O. I: 839.—Hand.-Mzt., Symb. Sin. 608 (1933).—Iljin in Fl. URSS XV: 152 (1949).

Mazarisharif cult. (June 30, 1955 S. K.).

The native place may be in China. This species is not wild in Syria.

Distr. Asia Minor, Caucasus, Iran, and China (Yunnan, Szechuan, Hupeh, Kuichau).

Hibiscus Trionum L., Sp. Pl. 697 (1753).—Boiss., F. O. I: 840 (1867).—Aitch., J. L. S. XVIII: 39, XIX: 154 (1882), T. L. S. n. III: 43.—Iljin in Fl. URSS

XV: 159 (1949).

Distr. Europe, Asia Minor, Syria, Caucasus, Dahuria, Zee-bur, Ussuri, Central Asia, Iran, Afghanistan, India, Himalaya, China, Mongolia.

Malva neglecta Wallr. in Syll. Ratisb. I: 140 (1824).—Hegi, Ill. Fl. V, : 485, Tab. 182-3, Fig. 1978 m-r (1925).—Iljin in Fl. URSS XV: 56 (1949).

Malva rotundifolia L., Sp. Pl. 688 (1753) p. p.—Boiss., F. O. I: 820.—Aitch., J. L. S. XVIII: 39, T. L. S. n. III: 43.

Afghanistan (1955 S. K.).

Distr. Europe, Caucasus, Central Asia, Asia Minor, Iran, Afghanistan, Pakistan, India, Himalayas, Dz.-Kashg., Mongolia, Tibet, China.

Malva nicaeensis All., Fl. Pedem. II: 40 (1785).—Boiss., F. O. I: 819 (1867).—Reich., Ic. Fl. Germ. V: Tab. CLXVIII, no. 4838 (1841).—Bonnier, Fl. Comp. Fr. II: pl. 95-501 (1912).

Kandahar (June 8, 1955 S. K.).

Distr. Europe, Caucasus, Gorn.-Turkm., Pam.-Al., Afghanistan, Iran, Asia Minor.

Malva parvifolia L., Amoen. Acad. III: 416 (1756).—Boiss., F. O. I: 820 (1867).—Iljin in Fl. URSS XV: 63 (1949).—Bonnier, Fl. Comp. Ill. Fr. II: pl. 95-503 (1912).

Distr. Mediterranean Region, Iran, Afghanistan, Caucasus, Pam.-Al., Kara-Kum.

Malva sylvestris L., Sp. Pl. 685 (1753).—Boiss., F. O. I: 819 (1867).—Masters in F. B. I. I: 320.—Aitch., T. L. S. n. III: 43.—Iljin in Fl. URSS XV: 41 (1949).—Reich., Ic. V: Tab. CLXVIII, no. 4840 (1841).

Distr. Europe, North Africa, Caucasus, Central Asia, Afghanistan, Pakistan, Himalaya: from Kashmir to Kumaon.

Guttiferae

Hypericum cernuum Roxb., Hort. Beng. 59 (1814), Fl. Ind. III: 400.—Jacquem., Voy. Bot. t. 33.—T. Dyer, F. B. I. I: 253.—Aitch., J. L. S. XIX: 154 (var.).

Distr. Pakistan (Kuram).

Hypericum perfolatum L., Sp. Pl. 785 (1753).—Boiss., F. O. I: 809.—T. Dyer, F. B. I. I: 255.—Aitch., J. L. S. XVIII: 38, XIX: 154.—Gorsch. in Fl. URSS XV: 248, Tab. XII-1 (1949).—Reich., Ic. VI: T. 343.—Rech. f., Symb. Afgh. IV: 59 (1959).

Nuristan: Between Kushimaicot and Pushuki (Aug. 3, 1955 S. K.), between Seprigal and Voma (July 29, 1955 S. K.), between Pulikhumri and Haibak (June 27, 1955 S. K.).

Distr. Europe, North Africa, Caucasus, Siberia, Central Asia, Asia Minor, Iran, Afghanistan, Himalaya: Kashmir to Kumaon, Pakistan, Dz.-Kashg., Mong., China.

Hypericum scabrum L., Centuria I: 25 (1755).—Boiss., F. O. I: 796.—Aitch., T. L. S. n. III: 42.—Gorsch. in Fl. URSS XV: 224.—Rech. f., l. c. 59.

Hypericum asperum Ledeb., Ic. Fl. Ross. I: 6, t. 17 (1829).

subsp. **sublaeve** Freyn et Sint. in Österr. Bot. Zeitschr. XLI: 364 (1891).—Rech. f., l. c. 59.

Distr. sp. Caucasus, W. Siberia, Central Asia (common), Asia Minor, Arm.-Kurd., Iran, Afghanistan.

Elatinaceae

Bergia aestivosa W. & A., Prodr. 41 (1834).—Th. Dyer, F. B. I. I: 251.—Aitch., J. L. S. XIX: 154.

Elatine aestivosa Wight, Ic. t. 222 (1839).

Distr. Pakistan (Kuram, Panjab etc.).

Bergia ammannioides Roxb., Hort. Beng. 34 (1814), Fl. Ind. II: 457 (1832).—Boiss., F. O. I: 782.—Wight in Hook., Bot. Misc. III: 93, suppl. t. 28, Ill. I: t. 254.—Th. Dyer, F. B. I. I: 251.—Gorsch. in Fl. URSS XV: 260.

Distr. Afghanistan, Pakistan, India, Syr-Dar., Pam.-Al., Arm.-Kurd., Iran, Mediterranean Region.

Frankeniaceae

Frankenia hirsuta L., Sp. Pl. 331 (1753).—Boiss., F. O. I: 780.—Gorsch. in Fl. URSS XV: 274, Tab. XXVI-3 (1949).

var. **laevis** (L.) Boiss., l. c. 780.

Frankenia laevis L., Sp. Pl. 473 (1753).—Aitch., T. L. S. n. III: 39.

Distr. sp. Europe, North Africa, Caucasus, W. Siberia, Central Asia (common), Afghanistan, Arm.-Kurd., Iran.

Frankenia pulverulenta L., Sp. Pl. 332 (1753).—Boiss., F. O. I: 779.—Aitch., T. L. S. n. III: 39.—Kirtikar and Basu, Indian Medical Plants pl. 92 (1918).—Gorsch., l. c. 273.

Distr. Europe, Africa, Caucasus, W. Siberia, Central Asia (common), Asia Minor, Arm.-Kurd., Iran, Afghanistan, Pakistan: Quetta in wheat field (May 27, 1955 S. K.), Dz.-Kashg.

Tamaricaceae

Myricaria germanica (L.) Desv. subsp. **alopecuroides** (Schrenk) Kitamura stat. nov.

Myricaria alopecuroides Schrenk in Fischer et Mey., Enum. Pl. I: 65 (1841).—Gorsch. in Fl. URSS XV: 324, T. XVI-3 (1949).

Myricaria germanica Boiss. (non Desv.), F. O. I: 763 p. p.—Aitch., J. L. S. XVIII: 38.

Doab (July 10, 1955 S. K.), Nuristan: Between Kushitaki and Pronz (Aug. 4, 1955 S. K.), between Kushimaicot and Pushuki (Aug. 3, 1955 S. K.).

Distr. Europe, Caucasus, Siberia, Central Asia (common), Mongolia, North China,

Tibet, Dz.-Kashg., Himalayas, Pakistan, Afghanistan, Iran, Arm.-Kurd.

Usually characterized by the long racemes and reflexed scarious bracts.

Reaumuria cistoides Adam in Web. et Mohr., Beitr. z. Naturkunde I: 61 (1805).
—Gorschk., l. c. XV: 282, T. XIV-1 (1949).

Reaumuria hypericifolia Aitch. (non Willd.), T. L. S. n. III: 42.

Distr. Caucasus, Central Asia, Iran, Afghanistan.

Reaumuria fruticosa Bunge ex Boiss., F. O. I: 759 (1867).—Gorschk., l. c. XV: 288.

Distr. Central Asia, Iran, Afghanistan (W).

Reaumuria squarrosa Jaub. et Spach, Ill. Pl. Or. III: 57, t. 247 (1847-50).

Distr. Iran, Afghanistan.

Reaumuria turkestanica Gorschk. in Not. Syst. Herb. Hort. Petrop. IV: 15-16: 118 (1923), in Fl. URSS XV: 282, Tab. XIV-3 (1949).

Reaumuria hypericifolia β . *latifolia* (M. B.) Trautv. in Bull. Soc. Nat. Mosc. II: 311 (1866).—Boiss., F. O. I: 761.—Aitch., T. L. S. n. III: 42.

Distr. Caucasus, Central Asia, Iran, Afghanistan.

Tamarix articulata Vahl, Symb. II: 48, t. 32 (1791).—Aitch., T. L. S. n. III: 42.—Niedenzu in Pflanzenfam. Bd. 21: 288, Fig. 124 (1925). Kirtikar and Basu, Indian Medical Pl. Pl. 99.

Distr. Africa, Arabia, Mesopotamia, Iran, Pakistan, Afghanistan (Helmand River)

Tamarix dioica Roxb., Hort. Beng. 22 (1814), Fl. Ind. II: 101 (1832).—Boiss., F. O. I: 777.—Dyer, F. B. I. I: 249.—Niedenzu, l. c. 288 (1925).

Distr. Afghanistan, Pakistan, Himalayas, India, Assam, Burma, South Africa.

Tamarix leptostachys Bunge in Mém. Acad. Sc. Pétersb. VII: 293 (1851).—Boiss., F. O. I: 776.—Niedenzu, l. c. 287.—Gorsch. in Fl. URSS XV: 310, Tab. XVI-5 (1949).

Doab (July 10, 1955 S. K.).

Distr. Central Asia (common), Afghanistan, Pakistan, Mongolia.

Tamarix macrocarpa Ehrenb. ex Bunge, Tent. Gen. Tamar. Spec. 79 (1852).—Boiss., F. O. I: 779.—Aitch., T. L. S. n. III: 42.—Niedenzu, l. c. 287, Fig. 123 M, N (1925).

Distr. Egypt, Iran, Afghanistan.

Native name Kirri, Gaz-surkh according to Aitchison.

Tamarix mannifera Ehrenb. ex Bunge, Tent. 63 (1852).—Boiss., F. O. I: 775.—Niedenzu in Pflanzenfam. 2 ed. B. 21: 287 (1925).

Tamarix gallica var. *mannifera* Ehrenb. in Linnaea II: 270 (1827).—Aitch., T. L. S. n. III: 42.

Distr. Arabia, Iran, Afghanistan.

Native name Gaz Shakar according to Aitchison.

Tamarix Meyeri Boiss., Diagn. Ser. I, X: 9 (1849).—Gorsch. in Fl. URSS

XV: 297, Tab. XV-8 (1949).

Tamarix tetragyna Aitch., T. L. S. n. III: 41.

Distr. W. Europe, Caucasus, Central Asia (common), Eastern Mediterranean Reg., Iran, Afghanistan.

Tamarix passerinoides Delile, Fl. Aeg. 58 (1813).—Boiss., F. O. I: 778.—Gorschk. in Fl. URSS XV: 314.

Distr. Afghanistan, Iran, Mesopotamia, Egypt, Balkan Peninsula, Asia Minor, Gorn.-Turkm., Kara-Kum.

Tamarix pentandra Pallas, Fl. Ross. I, II: 72 (1788) pro parte excl. tab. 79.—Rehder, Manual 2 ed. 643 (1940).—Stapf. in Bot. Mag. t. 8138.

Tamarix Pallasii DC. (non Desv.), Prodr. III: 26 (1828).—Boiss., F. O. I: 773.—Aitch., T. L. S. n. III: 41.—Niedenzu, l. c. 287 (1925).

Tamarix ramosissima Ledeb., Fl. alt. I: 424 (1829), Ic. t. 256.—Gorsch. in Fl. URSS XV: 311, Tab. XVI-4 (1949).

Between Haibak and Mazarisharif (June 27, 1955 S. K.), between Bulola and Doab (June 25, 1955 S. K.).

Distr. Eastern Europe, Greece, Asia Minor, Caucasus, Iran, Central Asia (common), Afghanistan, Pakistan: Qila Abdullah (May 28, 1955 S. K.), Tibet, Mongolia, China.

Abundant in Afghanistan.

Tamarix serotina Bunge ex Boiss., F. O. I: 773 (1867).—Niedenzu, l. c. 287 (1925).

Distr. Iran, Afghanistan.

Tamarix tetrandra var.? was reported by Aitchison, T. L. S. n. III: 41 from Western Afghanistan.

This was not verified by the later authors. *T. tetrandra* Pallas is distributed in E. Europe, Caucasus and in the Mediterranean Region, but not yet found in Iran.

Violaceae

Viola betonicifolia subsp. ***nepalensis*** Becker in Engler, Bot. Jahrb. LIV Beih. 120: 166 (1917).

Viola Patrinii DC. sensu Aitch., J. L. S. XVIII: 35.

Nuristan: Between Trokikorl and Chatrass (Aug. 1, 1955 S. K.).

Distr. Afghanistan, Himalayas, India, Burma, China, Java, Timor, Celebes, Philippines, Formosa, Ryukiu.

Viola biflora L., Sp. Pl. 936 (1753).—Aitch., J. L. S. XVIII: 35.—Becker in Pflanzenfam. 2 ed. 20 Bd.: 370, Fig. 159, 1 (1925).

Distr. Eurasia in alpine or subalpine region.

Viola Griffithiana Boiss., Diag. Ser. I, I: 54 (1842), F. O. I: 456.—Becker in Pflanzenfam. 2 ed. 20 Bd.: 367.

Distr. Afghanistan (Puschut).

Viola serpens Wall. ex Roxb., Fl. Ind. ed. Wall. II: 449 (1824).—DC., Prodr.

1: 296.—Royle, Ill. 74, t. 18, f. 1 (1834).—Hooker f. et Thom., F. B. I. I: 184.—Aitch., J. L. S. XVIII: 35.—Becker in Pflanzenfam. 2 ed. 20 Bd.: 368, Fig. 158, 19.

Eastern Prov: Between Kandai and Seprigal (July 28, 1955 S. K.), Nuristan: Between Seprigal and Voma (July 29, 1955, S. K.).

Distr. Afghanistan (E), Himalaya, India, China, Java.

Stem stoloniferous, leaves pubescent on both surfaces.

Viola Stocksii Boiss., F. O. I: 453 (1867).—Becker in Pflanzenfam. 2 ed. 20 Bd.: 374 (1925).

Distr. Afghanistan, Pakistan.

Datisceaceae

Datisca cannabina L., Sp. Pl. 1037 (1753).—Boiss., F. O. II: 763 (1872).—Hooker f., F. B. I. II: 656.—Gilg in Pflanzenfam. 2 ed. 21 Bd.: 547, Fig. 250 A-G (1925).—Gorschkova in Fl. URSS XV: 480 (1949).

Between Siyagird and Charikar (July 11, 1955 S. K.), Nuristan: Between Voma and Trokikorl (July 31, 1955 S. K.), between Chatrass and Kushimaicot (Aug. 2, 1955 S. K.).

Distr. Sicily, Crete, Asia Minor, Syria, Caucasus, Iran, Afghanistan, Syr-Dar., Pam.-Al., Tianshan, Himalaya: from Kashmir to Nepal.

Thymelaeaceae

Daphne mucronata Royle, Ill. Himal. Mount. 322, t. 81, f. 2 (1836).

β. **affghanica** Meissn., l. c. 322.

Daphne angustifolia C. Koch in Linnaea XXII: 611 (1849) var. *affghanica* Keissler in Engler, Bot. Jahrb. XXV: 65 (1898).

Daphne acuminata Boiss. et Hoh. ex Boiss., F. O. IV: 1048 (1879) pro parte.

Daphne oleoides Aitch. (non Schreb.) in J. L. S. XVIII: 91.—Hooker f., F. B. I. V: 193 (1886) pro parte.

Eastern Prov.: Between Kandai and Seprigal (July 28, 1955 S. K.), Nuristan: Between Trokikorl and Chatrass (Aug. 1, 1955 S. K.)—with fruits, between Sarobi and Kabul (June 18, 1955 S. K.)—with buds.

Distr. Afghanistan, Pakistan.

D. mucronata var. *affghanica* is not uncommon shrub along Pech River in Nuristan. It has usually more flowers in a head, as compared with var. *mucronata*. Sepals lanceolate acute.

var. *angustifolia* Koch in Linnaea XXII: 611 (1849): syn. *D. acuminata* Boiss. & Hohen., Diag. Ser. I, XII: 103 (1853) p. p. has ovate sepals, which are three times shorter than the receptacle.

Diarthron vesiculosum Endl., Gen. Suppl. IV, II: 63 (1847).—Boiss., F. O. IV: 1054 (1879).—Hooker f., F. B. I. V: 196.—Pobed. in Fl. URSS XV: 501 (1949).

Passerina vesiculosa Fischer & Mey. in Bull. Soc. Nat. Mosc. 1839 : 170.

Diarthron carinatum Jaub. et Spach, Ill. Pl. Or. II : t. 105 (1844-6).—Aitch., J. L. S. XVIII : 92, in T. L. S. n. III : 106.

Passerina costata Griffith, Not. IV : 367 (1851), Ic. Pl. Asiat. t. 535 (1854).

Between Kabul and Sarobi (June 15, 1955 S. K.), Lataband, Mullaomur (June 15, 1955 S. K.), Kabul, Tomb of Baber (July 14, 1955 S. K.), Kunduz (July 8, 1955 S. K.).

Distr. Eastern Europe : Niz.-Borg., Caucasus, Asia Minor, Iran, Afghanistan, Pakistan, Sungaria.

Thymelaea Passerina (L.) Cosson et Germain, Synops. analit. 360 (1859).—Lange in Willk. et Lange, Prodr. Fl. Hisp. I : 298 (1861-70).—Hegi, Ill. Fl. Mittel-Europ. V₂ : 727, t. 187 (1925).—Pobed. in Fl. URSS XV : 483 (1949).

Thymelaea arvensis Lamk., Fl. Franc. III : 218 (1778).—Aitch., J. L. S. XVIII : 92, T. L. S. n. III : 106.—Hooker f., F. B. I. V : 194.

Lygia Passerina Fasano in Atti Ac. Nap. 1787 : 247 (1788).—Boiss., F. O. IV : 1052 (1879).

Stellera Passerina L., Sp. Pl. 559 (1753).

Ghunoy near Sarobi (June 15, 1955 S. K.), Lataband, Mullaomur (June 15, 1955 S. K.).

Distr. Europe, Northern Africa, Asia Minor, Mesopotamia, Caucasus, Iran, Afghanistan, Berh.-Tob., Altai, Pakistan, Kashmir, Central Asia : Syr-Dar., Amu-Dar., Pamiro-Al., Gorn.-Turkm., Dz.-Kashg.

Wikstroemia canescens Meissner in Denkschr. Regensb. Bot. Gesellsch. III : 288 (1841), in DC., Prodr. XIV, II : 547.—Hooker f., F. B. I. V : 195.—Kitamura in Fauna and Flora of Nepal Himalaya 183 (1955).

Wikstroemia virgata Meissn., l. c. 289, and in DC., l. c.—Aitch., J. L. S. XVIII : 92.

Distr. Afghanistan (E), Himalaya : from Kumaon to Nepal, Upper Assam, Khasia Mts., Ceylon, Central Province, China : Yunnan, Kiangsi.

Elaeagnaceae

Elaeagnus angustifolia L., Sp. Pl. 121.—Reich., Ic. XI : 549-1166.—Aitch., J. L. S. XVIII : 92.—Gorshkova in Fl. URSS XV : 522, Tab. XXV-1 (1949).—Kozłowska in Flora et System. XII : 103, fig. 7 (1958).

Elaeagnus hortensis M. Bieb., Fl. Taur.-Cauc. I : 112 (1808).—Boiss., F. O. IV : 1056.—Aitch., T. L. S. n. III : 106.

Kabul (May 19, 1955 K. Yamashita)—fl., between Doab and Pulikhumri (July 26, 1955 S. K.)—wild with young fr.

Distr. Eurasia.

Sometimes cultivated near houses. Native name Sanjit or Sinjit according to Aitchison. Kozłowska reported *E. turcomanica* N. Kozl. from Central Asia, Iran,

and Afghanistan in Not. Syst. Herb. Kom. XVI: 258 (1954). *E. turcomanica* may be included specifically in *E. angustifolia*.

Elaeagnus umbellata Thunb. var. ***parvifolia*** (Royle) Schneider, Ill. Handb. Laubh. II: 411, fig. 280 d-e (1909).

Elaeagnus parvifolia Wall. ex Royle, Ill. Bot. Himal. 323, t. 81, fig. 1 (1836).—Aitch., J. L. S. XVIII: 92.

Distr. Pakistan (Kuram), Himalayas.

Hippophae rhamnoides L., Sp. Pl. 1023 (1753).—Boiss., F. O. IV: 1055.—Aitch., J. L. S. XVIII: 92.—Gorshkova in Fl. URSS XV: 516, Tab. XXV-2 (1949). Reich., Ic. XI, 549-1163.

Charikar (June 23, 1955 S. K.)—wild, along Bamian River (June 25, 1955 S. K.).

Distr. Europe, Siberia, Caucasus, Asia Minor, Iran, Afghanistan, Pakistan, Himalaya: from Kashmir to Kumaon, Dz.-Kashg., Mongolia, Tibet.

Lythraceae

Ammannia auriculata Willd. var. ***arenaria*** (H. B. et K.) Koehne in Bot. Jahrb. I: 245 (1880), Pflanzenreich Heft 17: 46 (1903) cum f. *persica* et f. *hyrcanica*.

Ammannia auriculata Boiss. (non Willd.), F. O. II: 743.

Distr. sp. Pan-subtropic.

Ammannia baccifera L., Sp. Pl. 120 (1753).—Aitch., J. L. S. XIX: 162. Kirtikar and Basu, Ind. Med. Pl. Pl. 430.

Ammannia baccifera (L.) Koehne subsp. *baccifera* (Hornem.) Koehne in Engler, Bot. Jahrb. I: 259, 260 (1881), Pflanzenreich Heft 17: 54.

Distr. Africa, Afghanistan, Pakistan, India, Malaya, China, Philippines, New-Guinea, Australia.

subsp. ***viridis*** (Hornem.) Koehne, l. c. (1881), Pflanzenreich Heft 17: 55.

Ammannia viridis Hornem., Hort. Hafn. 146 (1813).—Afanas. in Fl. URSS XV: 532 (1949).

Distr. Caucasus, Mediterranean Region, Niz.-Bolz., Arm.-Kurd., Iran, Afghanistan, India, Philippines, China.

Ammannia multiflora Roxb., Fl. Ind. ed. Wall. I: 447 (1820).—Boiss., F. O. II: 743.—Koehne in Pflanzenreich Heft 17: 48, Fig. 5-A (1903) cum var. *parviflora* Koehne.—Afanas. in Fl. URSS XV: 529.

Distr. Africa, Arm.-Kurd., Iran, Afghanistan, India, China, Philippines, Southern Japan, Australia.

Ammannia verticillata (Arduino) Lam., Enc. I: 131 excl. var. B (1783), Ill. I: 312, t. 77-3 (1791).—Boiss., F. O. II: 743 excl. syn.—Koehne in Pflanzenreich Heft 17: 51, Fig. 5-G (1903).—Afanas. in Fl. URSS XV: 530 (1949).

Distr. Mediterranean Reg., Arm.-Kurd., Iran, Afghanistan.

Lythrum salicaria L., Spec. Pl. 446 (1753).—Aitch., J. L. S. XIX: 162.—Koehne

in Pflanzenreich Heft 17 : 73 (1903).—Afanas. in Fl. URSS XV : 548, Tab. XXVI-1 (1949).

var. **tomentosum** DC., Prodr. III : 83 (1828).—Boiss., F. O. II : 738.—Koehne, l. c. 77 (1903).

Distr. sp. Cosmopolitan species.

Lythrum silenoides Boiss. et Noë, Diagn. Pl. Orient. Ser. II, II : 55 (1859), F. O. II : 68.—Koehne, l. c. 68 cum f. *Bungei* (1903).—Afanas. in Fl. URSS XV : 547.

Distr. Iran, Afghanistan (W), Mesopotamia, Kara-Kum., Pam.—Al.

Lythrum thymifolia L., Sp. Pl. 447.—Boiss., F. O. II : 740.—Koehne, l. c. 67 (1903).—Afanas. in Fl. URSS XV : 547, Tab. XXVI-10 (1949).

Distr. Mediterranean Reg., Eastern Europe, Caucasus, W. Siberia, Central Asia, Afghanistan.

Lythrum tribracteatum Salzm. ex Spreng., Syst. IV : 2, Cur. Post. 190 (1827).—Koehne in Pflanzenreich Heft 17 : 64, Fig. 8-B (1903).—Afanas. in Fl. URSS XV : 541, Tab. XXVI-6 (1949).

Lythrum bibracteatum Salzm. ex DC., Prodr. III : 81 (1828) pro syn.—Boiss., F. O. II : 740.

Distr. Mediterranean Reg., Eastern Europe, Caucasus, Western Siberia, Central Asia, Iran, Afghanistan.

Rotala densiflora (Roth) Koehne in Engler's Bot. Jahrb. I : 164 (1880), Pflanzenreich Heft 17 : 35, Fig. 3-C (1903).—Afanas. in Fl. URSS XV : 526.

Ammannia pentandra Roxb., Fl. Ind. ed. Wall. I : 448 (1820).—Aitch., J. L. S. XIX : 162.

Distr. sp. Africa, Iran, Afghanistan, Syr-Dar., Pam.—Al., India, South China, Ryukiu, Malaya, Australia.

Rotala leptopetala Koehne in Engler, Bot. Jahrb. IV : 388 (1883), Pflanzenreich Heft 17 : 34 (1903).

Distr. sp. Afghanistan, India, Malaya, Japan.

Rotala indica (Willd.) Koehne in Engler, Bot. Jahrb. I : 172 (1880), Pflanzenreich Heft 17 : 40 (1903).—Afanas. in Fl. URSS XV : 527 (1949).

Distr. Caucasus, Pamiro-Al., Iran, Afghanistan, India, Malaya, China, Japan.

Punicaceae

Punica granatum L., Sp. Pl. 472 (1753).—Boiss., F. O. II : 737.—Aitch., J. L. S. XVIII : 59.—Borisova in Fl. URSS XV : 553 (1949).

Between Doab and Pulikhumri (June 26, 1955 S. K.)—along Bamian River, wild. Native name Anal. Eastern Prov. : Kandai (July 27, 1955 S. K.).

Distr. Greece, Caucasus, Gorn.—Turkm., Pam.—Al., Asia Minor, Arm.—Kurd., Iran, Afghanistan, Pakistan.

The wild pomegranate is eaten. The cultivated races are many. There is a

seedless race in Ghundy near Sarobi. Kandahar is famous for the nice large pomegranate.

Myrtaceae

Myrtus communis L., Sp. Pl. 471 (1753).—Boiss., F. O. II: 736.—Aitch., J. L. S. XVIII: 59.

Jalalabad (June 17, 1955 S. K.) cultivated.

Distr. Mediterranean Region, Mesopotamia, Iran, Afghanistan, Pakistan.

Oenotheraceae

Chamaenerium angustifolium (L.) Scop., Fl. Carn. 2 ed.: 271 (1772).—Steinberg in Fl. URSS XV: 622, Tab. XXVII-3 (1949).—Rech. f., l. c. 62.

Epilobium angustifolium L., Sp. Pl. 347 (1753).—Aitch., J. L. S. XVIII: 60, cum var. *brachycarpo*.

Nuristan: Between Pushuki and Kushitaki (Aug. 4, 1955 S. K.).

Distr. Northern Hemisphere.

Chamaenerium latifolium (L.) Th. Fr. et Lange in Fl. Dan. fasc. 49, tab. 2901, 2902 (1877).—Steinberg in Fl. URSS XV: 626, Tab. XXVII-1 (1949).—Rech. f., Symb. Afgh. IV: 62 (1959).

Distr. Eurasia.

Circaea alpina L. subsp. *imaicola* (Aschers. et Magn.) Kitamura comb. nov.

Circaea Pricei Hayata, Ic. Pl. Formos. V: 72 (1915).

Circaea imaicola (Asch. et Magn.) Hand.-Mzt. in Symb. Sin. 603 (1933).—Kitamura, Fauna and Flora of Nepal Himalaya 186 (1955).

Circaea alpina var. *imaicola* Aschers. et Magn. in Bot. Zeitg. XXVIII: 74 (1870). var. **himalaica** Clarke in Hooker f., Fl. Brit. Ind. II: 589 (1879).

Nuristan: Chatrass (Aug. 2, 1955 S. K.).

Distr. var. Afghanistan (E), Himalayas.

Circaea alpina subsp. *imaicola* is widely distributed in Eastern Asia. The Afghan plants are larger. Stem 15–25 cm long. Leafblades 4.5 cm long 3.5 cm broad. The fruit contains one seed.

Epilobium Griffithianum Haussk. in Österr. Bot. Zeit. XXIX: 151 (1879), Mongr. Epilob. 195 (1884).—Léveillé, Iconogr. Epilob. pl. 58.

Distr. Afghanistan.

Said to be entirely glabrous.

Epilobium hirsutum L., Sp. Pl. 347 (1753).—Aitch., T. L. S. n. III: 746.—Steinberg in Fl. URSS XV: 578, Tab. XXVIII-3 (1949).

var. **tomentosum** (Vent.) Boiss., F. O. II: 746.—Haussk., Monogr. Epilob. 56.—Rech. f., l. c. 60.

Epilobium hirsutum L. var. *sericeum* Benth. ex Clarke, F. B. I. II: 584.—Aitch.,

J. L. S. XVIII: 60.

Kandahar, Arghandab (June 7, 1955 S. K.), Kabul (July 18, 1955 S. K.), Sarobi (June 16, 1955 S. K.), Mazarisharif (June 30, 1955 S. K.).

var. **villosum** Haussk., Monogr. Epilob. 55.

Distr. sp. Eurasia, North Africa.

Epilobium minutiflorum Haussk. in Österr. Bot. Zeit. XXIX: 55 (1879), Monogr. 212, t. IV-40.—Aitch., J. L. S. XIX: 163.—Léveillé, l. c. t. 135.—Steinberg in Fl. URSS XV: 620 (1949).—Rech. f., l. c. 60 (f. *minutiflorum* et f. *glabrescens* Haussk.).

Shibar Pass (June 24, 1955 S. K.), Pagman (July 15, 1955 S. K.), Lataband (June 15, 1955 S. K.).

Distr. Asia Minor, Caucasus, Central Asia, Iran, Afghanistan, Pakistan, Kashmir, W. Tibet.

var. **canescens** Kitamura var. nov.

Caule foliisque pilis brevibus dense canescentibus.

Lataband, Mullaomur (June 15, 1955 S. K.).—Typus in Herb. Univ. Kyoto.

Distr. Afghanistan.

Epilobium modestum Haussk. in Österr. Bot. Zeit. XXIX: 55 (1879), Monogr. 211.—Léveillé, Iconogr. t. 134.—Steinb. in Fl. URSS XV: 620 (1949).—Rech. f., l. c. 61.

Distr. sp. Iran, Afghanistan, Tianshan, W. Tibet.

Epilobium nepalense Hausskn. in Skof. XXIX: 53 (1879), Monogr. 218.—Rech. f., l. c. 61.

Distr. Afghanistan, Himalayas, Khasia.

Epilobium nervosum Boiss. et Buhse in Nouv. Mém. Soc. Nat. Mosc. XII: 88 (1860).—Haussk., l. c. 197.—Rech. f., l. c. 61.

Distr. Eastern Europe, Asia Minor, Caucasus, Iran, Afghanistan, Tianshan, Himalayas.

Epilobium nuristanicum Rech. f., l. c. 61, Fig. 23.

Distr. Afghanistan (Nuristan).

Epilobium parviflorum (Schreb.) DC., Prodr. III: 43 (1828).—Boiss., F. O. II: 747.—Haussk., Monogr. 66.—Steinb. in Fl. URSS XV: 580, Tab. XXVIII-4 (1949).—Rech. f., l. c. 62.

Nuristan (S. K.).

Distr. Europe, North Africa, Caucasus, Asia Minor, Mesopotamia, Iran, Afghanistan, W. Himalaya.

Epilobium Wattianum Hausskn., Mong. Epil. 204, Tab. IV-4.—Rech. f., l. c. 62.

Distr. Afghanistan, W. Himalaya.

Oenothera Lamarckiana Ser. in DC., Prodr. III: 47 (1828).—Rech. f., l. c. 62.

Kunduz (July 7, 1955 S. K.)—cum fr., Kabul, Dal-ul-Aman (July 18, 1955 S. K.).

Distr. A native of North America, now widely naturalized in Europe and Asia.

Ludwigia parviflora Roxb., Hort. Beng. 11 (1814), Fl. Ind. I: 419 (1832).—Wight, Ill. t. 101.—Boiss., F. O. II: 742.—Clarke, F. B. I. II: 588.

Distr. Afghanistan, Iran, Abyssinia, India, Malaya, Australia.

Halorrhagaceae

Myriophyllum spicatum L., Sp. Pl. 992 (1753).—Boiss., F. O. II: 755.—Gorshkova in Fl. URSS XV: 665, Tab. 13-1 (1949).

Kandahar, Arghandab (June 7, 1955 S. K.)—sterile.

Distr. Widely distributed in the World.

Araliaceae

Hedera himalaica Tobler, Gatt. Hedera 67, Fig. 31-38 (1912).

Nuristan: Between Voma and Chatrass (Aug. 1, 1955 S. K.)—similar to Fig. 33 of Tobler, without inflor.

Distr. Afghanistan, Pakistan, Himalayas, Khasia, Assam, Arakan.

Umbelliferae

Angelica nuristanica Kitamura in Acta Phytotax. Geobot. XVII: 131 (1958). Fig. 80.

Caulis elatus ramosus robustus glabratus multistriatus supra medium 12 mm diametro. Folia radicalia non visa, caulina media ampla bipinnatisecta, lacinulis oblongo-lanceolatis 4-9 cm longis mucronato-serratis basi cuneatis vel rotundatis interdum ad caulem decurrentibus, textura debilibus utrinque glabris, rachidibus glabris, petiolo basi late vaginato glabro. Umbella multiradiata, radiis 40-55, circ. 8 cm longis strictis angulato-striatis strigoso-puberulis, bracteis lineari-lanceolatis circ. 10 caducis basi hyalinis margine minute ciliolatis. Umbellula, radiis 30-34, in fructu 9-11 mm longis gracilibus angulatis glabris, bracteolis linearibus numerosis 2-4 mm longis. Corolla alba ovata 1.4 mm longa apice acuta incurva. Antherae 0.5 mm longae, filamenta 3 mm longa. Discus dilatatus, stylus abbreviatus. Mericarpium ellipticum 5 mm longum 4 mm latum utrinque retusum, alis circ. 1 mm latis, facie jugis 3, elatis.

Ab *A. glauca*, mericarpiis ellipticis minoribus, umbellae radiis copiosis, lacinulis foliorum lanceolatis differt.

Nuristan: Between Pushuki and Kushitaki 2450 m (Aug. 4, 1955 S. Kitamura).—Typus in Herb. Univ. Kyoto.

Hiroe reported *A. glauca* Edgew. from Afghanistan based on the flowering specimens of Koelz no. 13056 preserved in the Herbarium of University of California.

Angelica ternata Regel et Schmalh. in Tr. Bot. Sada. V, 2: 590 (1878).—Schischkin in Fl. URSS XVII: 25, Tab. II-2 (1951).

Angelica Strattoniana Aitch. & Hemsl., J. L. S. XIX: 164, t. 13 (1882).

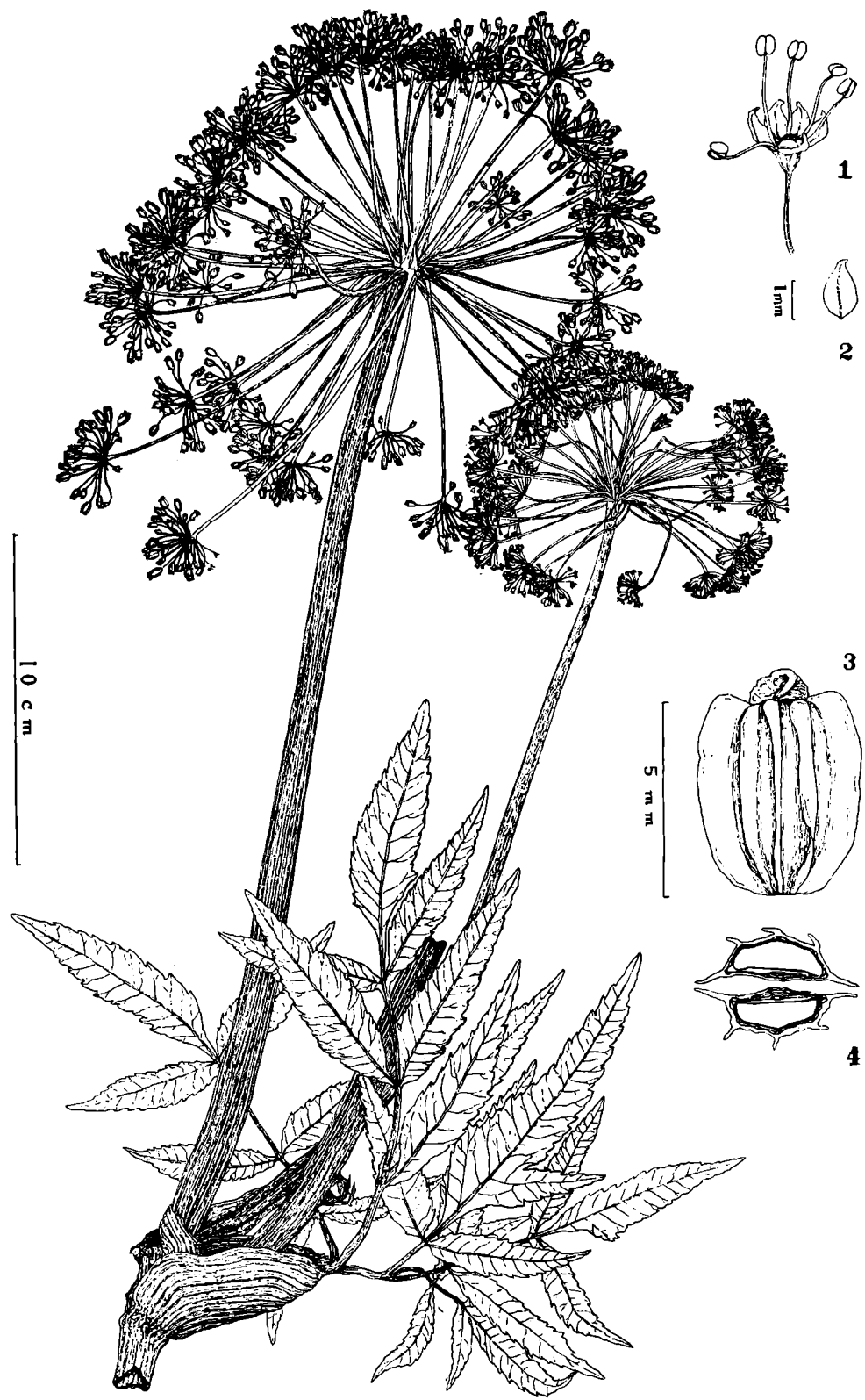


Fig. 80. *Angelica nuristanica* Kitam.: 1 Flower, 2 Petal, 3 Fruit, 4 Transversal Section of Fruit. (Nuristan : Between Kushitaki and Pronz).

Distr. Tianshan, Pam.-Al., Afghanistan (Kuram).

Aphanopleura leptoclada (Aitch. et Hemsl.) Lipsky in Bull. Acad. Sc. St. Pétersb. V : sér. IV : 377 (1896).—Wolff in Pflanzenreich Heft 90 : 19, Fig. 1 D-H (1927).

Carum leptocladum Aitch. et Hemsl., T. L. S. n. III : 66, pl. XXII.

Between Pulikhumri and Haibak (June 27, 1955 S. K.), between Doab and Pulikhumri (June 26, 1955 S. K.).

Distr. Central Asia, Afghanistan.

Apium graveolens L., Sp. Pl. 264 (1753).—Boiss., F. O. II : 856.—Aitch., J. L. S. XVIII : 61, T. L. S. n. III : 66.

Ghunoy near Sarobi (June 16, 1955 S. K.).

Distr. Europe, Africa, Caucasus, Central Asia, Asia Minor, Afghanistan, Pakistan.

Berula erecta (Huds.) Coville, Contr. U. S. Nat. Herb. IV : 115 (1893).—Hiroe, Umbelliferae of Asia I : 130 (1958).

Sium erectum Huds., Fl. Angl. 1 ed. 103 (1762).

Berula angustifolia Mert. & Koch, Deutschl. Fl. II : 433 (1812).—Boiss., F. O. II : 889.—Reich., Ic. XXI : t. 1878.

Distr. Europe, Caucasus, Asia Minor, Iran Afghanistan.

Bunium cabulicum Bornm. in Engl., Bot. Jahrb. LXVI : 229 (1934).

Distr. Afghanistan (Kabul).

Bunium persicum (Boiss.) B. Fedtsch., Rastit. Turkest. 612 (1915).—Wolff, in Pflanzenreich Heft 90 : 198.

Carum persicum Boiss. in Ann. Sc. Nat. 3 sér. Bot. 134 (1844), F. O. II : 884.

Carum meifolium var. *divergens* Aitch. (non Boiss. et Huet), J. L. S. XIX : 163.

Carum bulbocastaneum C. B. Clarke in F. B. I. II : 181.—Aitch., T. L. S. n. III : 66.

Between Sarobi and Kabul (June 18, 1955 S. K.), Nuristan : Between Kushi-maicot and Pushuki (Aug. 3, 1955 S. K.).

Distr. Iran, Afghanistan, Kashmir.

Bunium chaerophylloides (Rgl. et Schmalh.) Drude, in Pflanz.-fam. III, 8 : 194 (1889).

Bunium sogdianum (Lipsky) Wolff, in Pflanzenreich Heft 90 : 209.

Carum sp. Aitch., T. L. S. n. III : 66.

Distr. Central Asia, Afghanistan (NW).

Bupleurum Aitchisoni (Boiss.) Wolff, in Pflanzenreich Heft 43 : 142.

Bupleurum Olimpicum ? Aitchison ex Boiss., F. O. Suppl. 252 (1888).

Distr. Afghanistan (Kuram).

Bupleurum badachschanicum Lincz. in Fl. URSS XVI : 596 (1950).

Distr. Afghanistan.

Bupleurum falcatum L., Sp. Pl. 237 (1753).

var. **afghanicum** Kitamura var. nov.

Planta gracilis. Caulis 3–15 cm altus 0.3–0.8 mm in diametro. Folia radicalia anguste oblanceolato-lineariter trinerviata 1.2–4.5 cm longa 1.5–2.5 mm lata apice obtusa mucronulata glabra, caulina media et superiora lineari-lanceolata 5–20 mm longa 1–2 mm lata. Bractea 5, lanceolata 2.5–3 mm longa acuminata. Discus flavus.

Nuristan: Eschtaway (Aug. 5, 1955 S. K.)—Typus in Herb. Univ. Kyoto.

Distr. Afghanistan.

var. **linearifolium** (DC.) Boiss. ex Wolff in Pflanzenreich Heft 43: 135.

Bupleurum linearifolium DC., Prodr. IV: 132 (1830).—Boiss., F. O. II: 849.

Eastern Prov.: Between Kandai and Seprigal (July 28, 1955 S. K.), Pagman (July 15, 1955 S. K.).

var. **Hoffmeisteri** (Klotz.) C. B. Clarke, F. B. I. II: 676.

Nuristan: Voma (July 30, 1955 S. K.).

Distr. sp. Eurasia.

Bupleurum Gilesii H. Wolff, in Fedde, Repert. Sp. Nov. XXVII: 180 (1929).

Nuristan: Between Trokikorl and Chatrass (Aug. 1, 1955 S. K.).

Distr. Afghanistan, Pakistan.

Bupleurum subuniflorum Boiss. et Heldr. in Boiss., Diag. I, X: 28 (1849).—Wolff in Pflanzenreich Heft 43: 99 (1910).

Eastern Prov.: Between Kandai and Seprigal (July 28, 1955 S. K.).

Distr. Tauria, Afghanistan, Pakistan.

Carum Carvi L., Sp. Pl. 263 (1753).—Boiss., F. O. II: 879.—Clarke, F. B. I. II: 680. Reich., Ic. XXI: t. 1872.

Doab (June 24, 1955 S. K.), Shibar Pass (June 24, 1955 S. K.), Nuristan: Between Pushuki and Kushitaki (Aug. 4, 1955 S. K.), Eschtaway (Aug. 7, 1955 S. K.).

Distr. Europe, North Africa, Asia Minor, Caucasus, Siberia, Central Asia, Iran, Afghanistan, Pakistan, Himalaya: from Kashmir to Nepal.

The native name is Zira. The seeds of wild plants are called Zire Kohi and sold at the markets in Kunduz. The seeds of cultivated plants are longer (5–6 mm), and called Zila Abi. These seeds are used as spice. The seeds of *Anethum graveolens* L. are also used as spice. The native name is Shebat. In China Zira (蔘蘿) is *Anethum graveolens* L.

Chaerophyllum reflexum Lindl. in Royle, Illustr. Bot. Himal. 233 (1839).—Clarke, F. B. I. II: 691.

Nuristan, Pushuki (Aug. 8, 1955 S. K.).

Distr. Afghanistan, Pakistan, Himalaya: from Dalhousie to Kumaon.

Chaerophyllum villosum Wall. ex DC., Prodr. IV: 225 (1830).—Clarke, F. B. I. II: 690.

Nuristan: Between Pushuki and Kushitaki (Aug. 4, 1955 S. K.).

Distr. Afghanistan, Pakistan, Himalaya: from Kashmir to Sikkim, Khasia Mts.

Conium maculatum L., Sp. Pl. 243 (1753).—Boiss., F. O. II: 922.—Aitch., J. L. S. XVIII: 61, T. L. S. n. III: 65. Reich., Ic. XXI: t. 2032.

Kabul, Chelstoon (July 14, 1955 S. K.).

Distr. Europe, North Africa, Caucasus, Asia Minor, Iran, Afghanistan, Central Asia, Siberia.

Daucus Carota L., Sp. Pl. 242 (1753).—Boiss., F. O. II: 1076.—Aitch., J. L. S. XVIII: 64, T. L. S. n. III: 71.

Between Doab and Pulikhumri (June 26, 1955 S. K.).

Distr. Eurasia; adventive throughout the warmer parts of the earth.

The native name is Zardak.

Dorema Aitchisoni Korovin in Fl. URSS XVII: 158 (1951).

Dorema Ammoniacum Aitchison (non Don), T. L. S. n. III: 70, pl. XXIII-XXV.—Hiroe, Umbelliferae of Asia I: 181 (1958).

Distr. Kara-Kum., Gorn.-Turkm., Afghanistan.

Dorema hyrcanum K.—Pol. in Not. Syst. Herb. Hort. Petrop. II: 67 (1921).—Korovin, l. c. 163.

Dorema glabrum Aitch. (non Fisch. & Mey.), T. L. S. n. III: 70, pl. XXVI-XXVII

Distr. Gorn.-Turkm., Afghanistan.

Eremodaucus Lehmanni Bunge, Del. Sem. Hort. Dorp. 6. (1843).—Schisch., l. c. 250, Tab. XIII-2.

Trachydium Lehmanni (Bunge) Benth. & Hook. f., Gen. Pl. I: 884 (1867).—Aitch., T. L. S. n. III: 65, pl. XI.—Hiroe, Umbelliferae of Asia I: 125 (1958).

Trachydium Kotschyi f. *multisecta* Parsa, Fl. Iran II: 766, t. 155 (1948).

Between Haibak and Mazarisharif (July 27, 1955 S. K.).

Distr. Caucasus, Central Asia, Iran, Afghanistan.

Eryngium Biebersteinianum Nevski ex Bobrov in Fl. URSS XVI: 86 (1950).

Eryngium caeruleum Bieb., Fl. Taur. Cauc. I: 200 (1808) non Gilib. 1785.—Boiss., F.O. II: 823.—Aitch., J. L. S. XVIII: 60.—Wolff, in Pflanzenreich Heft 61: 130 (1913).

Eryngium creticum Hiroe (non Lam.) Umbelliferae of Asia I: 198 quoad pl. Afgh.

E. dichotomum Ledeb., Fl. Ross. II: 240 (1844) non Desf.

Faizabad near Herat (July 1, 1955 K. Yamashita), Darim (Aug. 11, 1937 W. Koelz no. 13074 UC), Khanabad (July 2, 1937 W. Koelz no. 12217 UC), Mak 2600m (Oct. 3, 1939 W. Koelz no. 14071 UC), Nozi 3000m (June 22, 1939 W. Koelz no. 12042 UC).

Distr. Caucasus, Central Asia, Arm.-Kurd., Iran, Afghanistan.

Eryngium carlinoides Boiss., F. O. II: 825 (1872).

Dal-ul-Aman (July 18, 1955 S. K.).

Distr. Afghanistan, Pakistan.

Ferula alliacea Boiss., Fl. Orient. II: 995 (1872).—Bornm. in Engler, Bot. Jahrb. LXVI: 231 (1934).

Distr. Iran and Afghanistan.

Ferula Assa-foetida L., Sp. Pl. 248 (1753).—Boiss., F. O. II: 994.—Korovin in Fl. URSS XVII: 73 (1951).—Hiroe, Umbelliferae of Asia I: 184 (1958).

Ferula foetida Regel in Tr. Bot. Saga V: 592 (1879).—Aitch., T. L. S. n. III: 68. pl. XII, XIII.

Distr. Kiz.-Kum., Kara-Kum., Gorn.-Turkm., Iran, Afghanistan.

Ferula badrakema K.-Pol. in Not. Syst. Herb. Horti Petrop. II: 61 (1921).—Korovin, l. c. 90.

Ferula galbaniflua Aitch. (non Boiss. et Buhse), T. L. S. n. III: 98, pl. XV—XVIII.

Ferula afghanica Hiroe, Umbelliferae of Asia I: 185.

Ashtarlai (July 14, 1955 S. Iwamura)—Fragments of leaflets and fruits.

Distr. Gorn.-Turkm., Iran, Afghanistan (W).

Ferula badhysi Korovin, Monogr. 67 (1947), Fl. URSS XVII: 126 (1951).

Ferula oopoda Aitch. (non Boiss.), T. L. S. n. III: 67, pl. XV—XIX.

Distr. Gorn.-Turkm., Afghanistan.

Ferula communis L., Sp. Pl. 246 (1753).—Aitch., J. L. S. XIX: 165.

Distr. Mediterranean Region, Afghanistan.

Ferula diversivittata Regel & Schmalh. in Acta Horti Petrop. V: 593 (1877).—Korovin, l. c. 83.

Ferula suaveolens Aitch. et Hemsl., T. L. S. n. III: 69, Pl. XX—XXI.

Between Sarobi and Kabul (June 18, 1955 S. K.)—fruits, Shibar Pass (June 24, 1955 S. K.)—fruits, Doab (June 24, 1955 S. K.)—radical leaf.

Distr. Afghanistan, Central Asia.

Ferula gumosa Boiss., Diag. Pl. Nov. Ser. II, II: 92 (1856).—Korovin, l. c. 90.

Ferula galbaniflua Boiss. et Buhse in Nouv. Mém. Soc. Nat. Mosc. XII: 99 (1860), F. O. II: 988. Köhler, Mediz. Pl. Atlas II: 153.

Distr. Gorn.-Turkm., Iran, Afghanistan.

Ferula Jaeschkeana Vatke, Sem. Hort. Berol. App. 2 (1876).—Aitch., J. L. S. XVIII: 63.—Korovin, l. c. 86. Gartenflora 1878: t. 944.

Nuristan, Shabul Gul (Aug. 6, 1955 S. K.)—fr., Voma (July 30, 1955 S. K.)—fr., between Kushitaki and Pronz (Aug. 4, 1955 S. K.)—fr.

Distr. Tianshan, Pam.-Al., Afghanistan.

Ferula oopoda Boiss., Fl. Orient. II: 984 (1872).—Korovin, l. c. 129.

Distr. Caucasus, Iran, Gorn.-Turkm.

Ferula ovina Boiss., F. O. II: 986 (1872).—Aitch., T. L. S. n. III: 68.—Korovin, l. c. 110.

Ferula Stewartiana var. *affghanica* O. E. Schulz in Not. Bot. Gart Berl. XI:

877 (1933).

Distr. Iran, Afghanistan, Central Asia.

Ferula Schtschurowskiana Regel et Schmalh. ex Regel, Pl. Nov. Fedisch. 34 (1882).—Korov., l. c. 138.

Dorema serratum Aitch. et Hemsl., T. L. S. n. III: 70, pl. XXVIII.

Distr. Central Asia, Afghanistan.

Ferula Szowitziana DC., Prodr. IV: 173 (1830).—Aitch., T. L. S. n. III: 81.—Korovin, l. c. 61, Tab. IX-1.

Distr. Caucasus, Armenia, Iran, Afghanistan.

Foeniculum vulgare Mill., Gard. Dict. 8 ed. n. 1 (1768).—Aitch., J. L. S. XVIII: 62.

Distr. Mediterranean Region: adventive in Eurasia, America and Australia.

Heracleum afghanicum Kitamura in Acta Phytotax. Geobot. XVII: 131 (1958).
Fig. 81.

Affinis *Heracleo persico* a quo caule dense piloso, foliis subtus dense cinereo-pubescentibus, supra secus costam puberulis divergit.

Caulis robustus elatus multisulcatus dense paleaceopilosus ad medium 9 mm latus, ramosus, ramis ascendentibus. Folia radicalia ampla, caulina media basi late vaginata, lamina profunde trifida, laciniis oblongis vel oblongo-lanceolatis irregulariter dentatolobatis, laciniis terminalibus trifidis, supra viridibus secus costam minute puberulis ceteris glabris, subtus pilis minutis densissime cinereo-pubescentibus, vagina ampla 8 cm longa 4.5 cm lata, pilis albis longis et cinereis abbreviatis dense vestita. Umbella sub anthesi 15 cm in diametro, basi albo-floccosa, radiis 30–35, sub anthesi 4–8.5 cm longis minute papilloso-pubescentibus, bracteis 2–5, linearilanceolatis pilosis reflexis. Umbellula 18–20 mm in diametro, radiis copiosis gracilibus angulatis pubescentibus, sub anthesi 5–8 mm longis, bracteolis circ. 8, 4–9 mm longis. Flores marginales zygomorphi, petala maxima 8–10 mm longa 8–10 mm lata bifida. Flores centrales actinomorphi, petala elliptica apice acuminata incurva. Antherae 1 mm longae, filamenta 3 mm longa. Ovarium densissime pilosum, disco 1 mm alto, stylo 1.2 mm longo.

Near Shibar Pass 2500 m (June 24, 1955 S. Kitamura)—Typus in Herb. Univ. Kyoto.

Distr. Afghanistan.

Heracleum leucocarpum Aitch. & Hemsl., J. L. S. XIX: 165 (1882).

Distr. Afghanistan (Kuram).

Heracleum propinquum Aitch. & Hemsl., J. L. S. XIX: 165.

Distr. Afghanistan (Kuram).

Hiroe reported *Heracleum Thomsoni* C. B. Clarke and *H. nubigeum* C. B. Clarke from Afghanistan: cf. Umb. As. I: 191. He also reported *H. lanatum* Michaux from Afghanistan, l. c. 194.

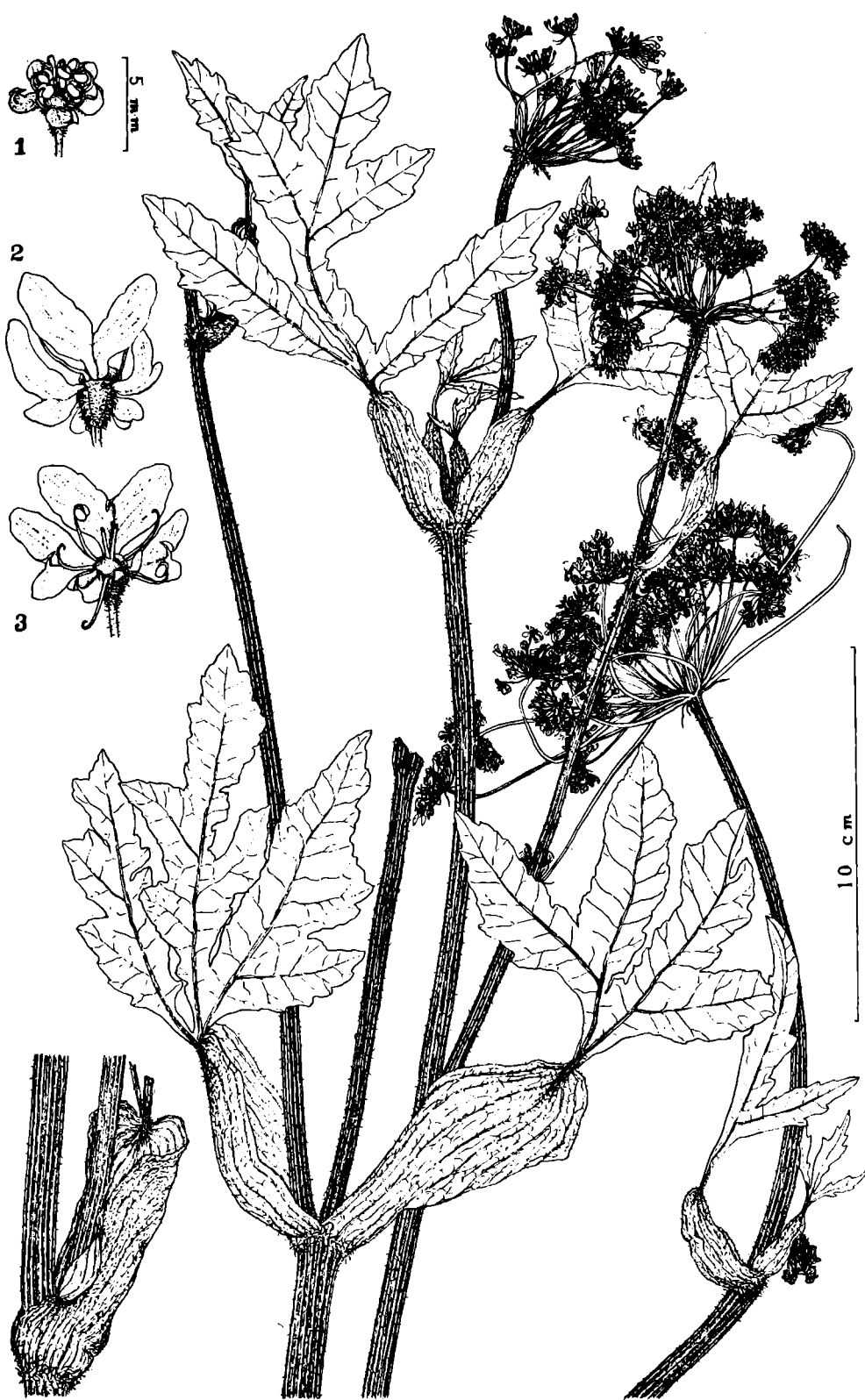


Fig. 81. *Heracleum afghanicum* Kitam.: 1 Central Flower, 2 and 3 Marginal Flowers. (Near Shibar Pass).

Johrenia platypoda Aitch. et Hemsl., T. L. S. n. III: 71, pl. XXIX (1888).

Distr. Afghanistan.

Korovinia tenuisecta (Regel et Schmalh.) in Nevski et Vved. in Tr. Bot. Inst. An. SSSR, ser. I, IV: 242 (1937).—Korovin in Fl. URSS XVII: 212, Tab. XIX-2, XXI-6 (1951).

Distr. Afghanistan, Central Asia.

Levisticum officinale Koch in Nova Acta Acad. Leop.-Carol. XII: 101 (1825).

Ligusticum Levisticum L., Sp. Pl. 250. (1753).

Nuristan: Between Trokikorl and Chatrass (Aug. 2, 1955 S. K.).

Distr. Southern Europe; escaped from cultivation.

Ligusticum elatum C. B. Clarke, in Hook. f., F. B. I. II: 698. —Hiroe, Umbelliferae of Asia I: 107 (1958).

Nuristan: Between Kushitaki and Pronz (Aug. 4, 1955 S. K.).

Distr. W. Himalaya, Afghanistan.

Hiroe reported *Ligusticum Thomsoni* Clarke from Afghanistan: cf. Umb. As: I: 104.

Pastinaca sativa L., Sp. Pl. 262 (1753). Reih., Ic. XXI: t. 1982.

Doab (June 24, 1955 S. K.).

Distr. Europe; widely naturalized.

Pimpinella diversifolia DC., Prodr. IV: 122 (1830).—Aitch., J. L. S. XVIII: 61. —Clarke, F. B. I. II: 688.

Distr. Afghanistan (Kuram), Pakistan, Himalayas, Khasia Mts., China, Japan (Kyushiu).

Pimpinella Griffithiana Boiss., Diag. Ser. II, II: 74 (1856), F. O. II: 868.

Distr. Afghanistan.

Pimpinella kuramensis Kitamura nom. nov.

Pimpinella tripartita Aitch. et Hemsl., J. L. S. XIX: 164, pl. II (1882), non Kalenicz 1845.

Distr. Afghanistan (Kuram), Pakistan: Swat Himalaya (K. Honda).

Hiroe reported *P. sikkimensis* C. B. Clarke and *P. deverroides* Boiss. from Afghanistan, cf. Umbelliferae of Asia I: 60, 70 (1958).

Pleurospermum corydalifolium Aitch. & Hemsl., J. L. S. XVIII: 62.

Distr. Afghanistan.

Pleurospermum pulchrum Aitch. & Hemsl., J. L. S. XVIII: 63, XIX: 164, pl. XII.

Distr. Afghanistan (Kuram).

Prangos pabularia Lindl. in Quart. Journ. Sc. XIX: 7 (1825).—Aitch., J. L. S. XVIII: 62, T. L. S. n. III: 66.—Bornm. in Engler, Bot. Jahrb. LXVI: 230 (1934). —Fedtschenko in Fl. URSS XVI: 270. Wallich, Pl. asiat. II: t. 212.

Koelzella pabularia Hiroe, Umbelliferae of Asia I: 146 (1958).

Pagman near Kabul (July 15, 1955 S. K.), Hazarajat, Ashtarai (July 14, 1954 S. Iwamura).

Distr. Afghanistan, Pakistan, Kashmir, Kashgar, Tianshan, Pam.-Al.

Psammogeton canescens (DC.) Vatke in App. ad Ind. Sem. Hort. Berol. 3 (1876).—Schischkin, l. c. 166.—Rechinger f. in Berich. Deut. Gesells. LXIX, 5: 230 (1956).—Hiroe, Umbelliferae of Asia I: 37 (1958).

Psammogeton biternatum Edgew. in Trans. Linn. Soc. XX: 57 (1847).—Clarke, F. B. I. II: 719.—Aitch., T. L. S. n. III: 72.

Distr. Gorn.-Turkm., Iran, Afghanistan, Pakistan.

subsp. **cabulicus** Wagenitz ex Rechinger f., l. c. 233, Abb. 5.

Distr. Afghanistan (E).

Psammogeton setifolium Boiss., F. O. II: 1079.—Schischkin, Fl. URSS XVI: 165.

Distr. Afghanistan, Iran, Central Asia.

Pycnocycla nodiflora Decne. ex Boiss. in Ann. Sc. Nat. Sér. III, II: 88 (1844), F. O. II: 953.

Distr. Afghanistan, Iran.

Reutera papillaris Boiss, Diagn. Ser. II, II: 76 (1856), F. O. II: 861.

Distr. Afghanistan.

Scandix Aucheri Boiss. in Ann. Sc. Nat. Sér. III, II: 58 (1844), F. O. II: 916.—Schischkin, Fl. URSS XVI: 147, Tab. X-4.

Distr. Caucasus, Iran, Gorn.-Turkm., Afghanistan.

Scandix Pecten-Veneris L., Sp. Pl. 256 (1753).—Aitch., J. L. S. XVIII: 61.—Bornm. in Engler, Bot. Jahrb. LXVI: 230 (1934).—Schischkin, l. c. 141.—Hiroe, Umbelliferae of Asia I: 33 (1958).

Distr. Europe, Caucasus, Asia Minor, Arm.-Kurd., Iran, Central Asia, Afghanistan, Pakistan, Kashmir.

Scandix persica Mart in Hort. Monac. 4 (1837).—Schischkin, l. c. 141.

Scandix pecten-Veneris var. *brevirostris* Boiss., F. O. II: 915.

Distr. Iran, Afghanistan, Pakistan.

Selinum papyraceum C. B. Clarke, F. B. I. II: 701.—Aitch., J. L. S. XVIII: 62.

Distr. Pakistan, Himalaya: from Kashmir to Sikkim.

Seseli sibiricum Benth. ex Clarke, F. B. I. II: 693.—Aitch., J. L. S. XVIII: 61.

Seseli Libanotis subsp. *sibiricum* (L.) Thellung in Hegi, Ill. Fl. Mitt.-Eur. V₂: 1246 (1926).

Nuristan: Between Trokikorl and Chatrass (Aug. 1, 1955 S. K.), Eschtaway (Aug. 5, 1955 S. K.), between Kushimaicot and Pushuki (Aug. 3, 1955 S. K.).

Distr. Europe, Afghanistan, India, Russia and Siberia.

Smyrium cordifolium Boiss., Diagn. Ser. I, VI: 64 (1855), F. O. II: 926.—Aitch., T. L. S. n. III: 66.

Distr. Syria, Iran, Gorn.-Turkm., Afghanistan (W).

Torilis japonica (Houtt.) DC., Prodr. IV: 219 (1830).

Caucalis Anthriscus Huds., Fl. Angl. 99 (1762).—Aitch., J. L. S. XVIII: 64.

Between Pulikhumri and Haibak (June 27, 1955 S. K.), Kandahar (June 6, 1955 S. K.). Nuristan: Between Seprigal and Voma (July 27, 1955 S. K.).

Distr. Eurasia to North Africa.

Torilis nodosa (L.) Gaetn., De Fr. I: 82 (1788).—Boiss., F. O. II: 1083.—Hegi, Ill. Fl. V₂: 1057, Fig. 2397.

Distr. Europe, North Africa, Caucasus, Asia Minor, Iran, Afghanistan, Central Asia.

Trachydium Kotschyi Boiss., F. O. II: 929.—Aitch., T. L. S. n. III: 66.

Distr. Iran, Afghanistan.

Hiroe reported *Trachydium dissectum* C. B. Clarke—*Schultzia dissecta* C. Norman from Afghanistan: cf. Umb. As. I: 116.

Trachyspermum Copticum (L.) Link, Enum. Hort. Berol. I: 267 (1821).

Trachyspermum Ammi (L.) Sprague in Kew Bull. 228 (1929).—Schischkin in Fl. URSS XVI: 379.

Ammi Copticum L., Mant. 50 (1767).—Boiss., F. O. II: 891.

Distr. Egypt, Mesopotamia, Iran, Afghanistan, Amu-Dar., Pam.-Al.

Turgenia latifolia Hoffm., Gen. Umbell. 59 (1814).—Boiss., F. O. II: 1087.—Reich., Ic. XXI: t. 2009.

Caucalis latifolia L., Syst. Nat. ed. XII, II: 205.—Aitch., J. L. S. XVIII: 64, T. L. S. n. III: 72.—Hiroe, Umbelliferae of Asia I: 39 (1958).

Between Doab and Pulikhumri (June 26, 1955 S. K.).

Distr. Europe, North Africa, Caucasus, Central Asia, Asia Minor, Iran, Afghanistan, Kashmir.

Zosima absinthifolia (Vent.) Link, Pl. Umbell. 145 (1814).—Boiss., F. O. II: 1037.—Aitch., T. L. S. n. III: 71.

Distr. Caucasus, Asia Minor, Arm.-Kurd., Iran, Central Asia, Afghanistan.

Zosima lasiocarpa Boiss., F. O. II: 1038 (1872).

Peucedanum lasiocarpum Boiss., Diagn. Ser. II, II: 88 (1856).

Distr. Afghanistan.

Hiroe reported *Zosima tragioides* Boiss. from Afghanistan: cf. Umb. As. I: 195.

Sympetalae

Pyrolaceae

Monotropa Hypopitys L., Sp. Pl. 387 (1753).—Boiss., F. O. III: 975.

Hypopitys lanuginosa Rafin. in Med. Rep. N. Y. ser III, I: 297 (1810).—Nutt., Gen. Am. I: 27 (1818).—Aitch., J. L. S. XVIII: 76.—Clarke, F. B. I. III: 476.

Hypopitys monotropa Crantz, Inst. II: 467 (1766).—Vovrov in Fl. URSS XVIII: 21 (1952).

Distr. Northern Hemisphere, Afghanistan (Kuram).

Ericaceae

Rhododendron afghanicum Aitch. et Hemsl., J. L. S. XVIII: 75, XIX: Pl. XX, fig. 1-8.

Distr. Afghanistan.

Rhododendron Collettianum Aitch. et Hemsl., J. L. S. XVIII: 75, XIX: Pl. XXI, figs 1-7 (1882).—J. D. Hooker in Curtis's Bot. Mag. t. 7019 (1888).—Schneider, Ill. Hand. II: 480 (1912).

Nuristan: Chatrass (Aug. 11, 1955 S. K.)—fruits.

Distr. Afghanistan.

The innerside of the corolla densely hairy. Sepals obtuse or truncate at the apex.

A. Linchevsky and A. V. Prozorovsky reported *Rhododendron campanulatum* from Sefid-kuh (Kew Bull. 1949 p. 203, 204, 207).

Myrsinaceae

Myrsine africana L., Sp. Pl. 196 (1753).—Boiss., F. O. IV: 31 (1879).—Clarke in F. B. I. III: 57 (1882).—Schneider, Ill. Hand. II: 572, fig. 371 k-p (1911).—Hand.-Mzt., Symb. Sin. Anth. 759 (1936).—Mez in Pflanzenreich Heft 9: 340, Fig. 58 (1902).

Distr. Africa, Arabia, Afghanistan, Pakistan, Himalaya: Kashmir to Nepal, China: Yunnan, Szechuan, Kuichau.

Sapotaceae

Reptonia buxifolia (Falc.) A. DC., Prodr. VIII: 153 (1844).—Boiss., F. O. IV: 32.—Clarke in F. B. I. III: 534 (1882).

Edgeworthia buxifolia Falc. in Proc. Linn. Soc. I: 129 (1842), in Trans. Linn. Soc. XIX: 99, t. 9 (1845).

Monothera buxifolia (Falc.) Decne. ex Engler in Pflanzenfam. IV, 1: 88 (1891).

Distr. Afghanistan, Pakistan.

According to Radlkofer this was transferred from Myrsinaceae to Sapotaceae.

Primulaceae

Anagalis arvensis L., Sp. Pl. 148 (1753).—Boiss., F. O. IV: 6 (1879) *α. phaenicea*.—Aitch., J. L. S. XVIII: 78, T. L. S. n. III: 86.—Pax u. Knuth in Pflanzenreich Heft 22: 322 (1905).—Hooker f., F. B. I. III: 506 (1882).—Fed. in Fl. URSS XVIII: 276 (1952).—Wendelbo, l. c. 75.

Between Pulikhunri and Haibak (June 27, 1955 S. K.), Mazarisharif (July 1, 1955

S. K.).

Distr. A cosmopolitan weed. A native of Europe and Western Asia.

Our plants have red corollas which are glanduloso-ciliate on margin.

Androsace crassifolia Wendelbo in Symb. Afgh. IV: 70, Fig. 28.

Nuristan: Between Voma and Trokikorl (July 31, 1955 S. K.).

Distr. Afghanistan.

Androsace himalaica (Knuth) Hand.-Mzt. in Acta Horti Goth. II: 114 (1926).

—Wendelbo, l. c. 72, Fig. 29 (1959).

Androsace tibetica var. *himalaica* R. Knuth in Pflanzenreich Heft 22: 186 (1905).

A. sempervivoides var. *bracteata* Watt ex Aitch., J. L. S. XIX: 176.

Distr. Afghanistan (E), Pakistan.

Androsace maxima L., Sp. Pl. 141 (1753).—Boiss., F. O. IV: 18.—Aitch., T. L. S. n. III: 86.—Pax u. Knuth, Pflanzenreich Heft 22: 212 (1905).—Wendelbo, l. c. 73.

Distr. Europe, Asia Minor, Iran, Afghanistan (W).

Androsace mucronifolia Watt. in Journ. Linn. Soc. XVIII: 381, t. XIV B (1881), —Pax u. Knuth in Pflanzenreich Heft 22: 188 (1905).—Hand.-Mzt. in Acta Horti Goth. II: 115 (1926).—Wendelbo in Nytt Mag. Bot. I: 48 (1952), Symb. Afgh. IV: 74.

A. microphylla Hooker f., F. B. I: 498 (1881).

Nuristan, Shabul Gul (Aug. 7, 1955 S. K.).

Distr. Afghanistan (E), Pakistan, Kashmir, Tibet, China: Szechuan, Kansu.

Androsace rotundifolia Hardw. in As. Res. VI: 350 (1799).—Hooker f., F. B. I. III: 496.—Pax u. Knuth in Pflanzenreich Heft 22: 176 (1905), incl. var. *incisa* (W.) R. Knuth.—Wendelbo, l. c. 74.

A. incisa Wall. in Roxb., Fl. Ind. ed. Wall. II: 16 (1824).—Aitch., J. L. S. XVIII: 77.

Distr. Afghanistan (Pakistan border), Pakistan, Himalaya: from Kashmir to Kumaon.

Androsace villosa L. var. *villosissima* R. Knuth in Pflanzenreich Heft 22: 192 (1905).

Androsace villosa L.—Aitch., J. L. S. XIX: 176 (1882).—Wendelb, l. c. 74.

Distr. Afghanistan.

var. **robusta** R. Knuth f. *longiscapa* R. Knuth, l. c. 192 (1905).

A. villosa β. *congesta* Boiss., F. O. IV: 14 p. p. (1879).

Distr. Afghanistan, Pakistan, Kashmir, China: Shansi (according to Knuth).

Cortusa Brotheri Pax ex Lipsky in Acta Horti Petrop. XVIII: 87 (1900).—Fedorov in Fl. URSS XVIII: 245.

Cortusa himalaica Los. in Acta Inst. Bot. Acad. Sci. URSS I, 3: 238, fig. 1, 3

(1936).—Wendelbo, l. c. (1959).

Cortusa Matthioli (non L.) Aitch., J. L. S. XVIII: 78.—Hooker f., F. B. I. III: 501 (1881).

Distr. Afghanistan, Dz.-Tarb., Tianshan, Himalaya: Kashmir, Tibet.

Dionysia hissarica Lipsky in Acta Horti Petrop. XVIII: 83, Tab. X (1900).—Smol. in Fl. URSS XVIII: 213, Tab. XI (1952).—Wendelbo, l. c. 68.

Distr. Pam.-Al., Afghanistan.

Dionysia microphylla Wendelbo, l. c. 68, Fig. 26 (1959).

Distr. Afghanistan.

Dionysia tapetodes Bunge in Bull. Acad. Pétersb. XVI: 560 (1871).—Boiss., F. O. IV: 21.—Aitch., J. L. S. XVIII: 78, T. L. S. n. s. III: 86.—Pax u. Knuth in Pflanzenreich Heft 22: 163, fig. 40 K-M (1905).—Smol. in Fl. URSS XVIII: 209, Tab. XII (1952).—Wendelbo, l. c. 70.

Nuristan: Between Voma and Trokikori (July 31, 1955 S. K.).

Distr. Iran, Afghanistan, Gorn.-Turkm.

Glaux maritima L., Sp. Pl. 207 (1753).—Boiss., F. O. IV: 7 (1875).—Aitch., J. L. S. XVIII: 78, T. L. S. n. s. III: 86.—Hooker f., F. B. I. III: 505 (1882).—Pax u. Knuth in Pflanzenreich Heft 22: 319, Fig. 69 (1905).—Vassil. in Fl. URSS XVIII: 274 (1952).—Hara in Journ. Fac. Sci. Univ. Tokyo III, Vol. VI, 7: 358 (1956).—Wendelbo, l. c. 75.

Kabul in wet place (June 22, 1955 S. K.), between Bulola and Doab in swamp (June 25, 1955 S. K.).

Distr. Eurasia, North America.

var. *obtusa* Fernald is not so distinct as stated by R. Knuth.

Lysimachia dubia Soland ex Ait., Hort. Kew. I: 199 (1789).—Boiss., F. O. IV: 8.—Aitch., J. L. S. XVIII: 78.—Pax u. Knuth in Pflanzenreich Heft 22: 289 (1905).—Vassil. in Fl. URSS XVIII: 264 (1952).—Wendelbo, l. c. 75.

Pulikhumri (July 3, 1955 S. K.), Ghunoy near Sarobi (June 15, 1955 S. K.), between Pulikhumri and Haibak (June 27, 1955 S. K.).

Distr. Eastern Europe, Asia Minor, Caucasus, Mesopotamia, Iran, Afghanistan, Pakistan (Kuram), Pamiro-Alai, Tianshan.

Primula Aitchisonii Pax in Pflanzenreich Heft 22: 105, Fig. 29 B, C (1905).

Primula purpurea Aitchison (non Royle), J. L. S. XVIII: 77 (1880).—Buser in F. O. Suppl. 342 (1888).

Distr. Afghanistan.

Primula afghanica Wendelbo in Symb. Afgh. IV: 63, Fig. 24 (1959).

Distr. Afghanistan.

Primula auriculata Lam., Ill. gen. I: 429 (1791).—Boiss., F. O. IV: 28.—Pax u. Knuth in Pflanzenreich Heft 22: 74 (1905).—Vassil. in Fl. URSS XVIII: 183 (1952).

P. Tournefortii Rupr. in Bull. Acad. Sc. Pétersb. VI: 288 (1863).—Vassil., l. c. 186 (1952).

Distr. Asia Minor, Caucasus, Iran, Afghanistan.

Primula capitellata Boiss., Diag. Ser. I, VII: 64 (1846), F. O. IV: 30 (1879).—Pax u. Knuth in Pflanzenreich Heft 22: 75 (1905).—Wendelbo, l. c. 65.

Distr. Iran, Afghanistan.

Primula denticulata Smith, Exot. Bot. II: 109 t. 114 (1805).—Aitch., J. L. S. XVIII: 77 (1880).—Hooker f., F. B. I. III: 114 (1882).—Pax u. Knuth in Pflanzenreich Heft 22: 90 (1905).—Kitamura in Fauna and Flora of Nepal Himalaya 198, Fig. 44 (1955).—Wendelbo, l. c. 65.

P. denticulata var. *capitata* Aitch., J. L. S. XIX: 175 (1882).

Distr. Afghanistan (E), Pakistan, Himalaya, Assam, Upper Burma.

Primula Fedtschenkoi Regel in Acta Horti Petrop. III: 133 (1874).—Vassil., l. c. 189, Tab. VIII-1.—Wendelbo, l. c. 65.

Distr. Pam.-Al., Afghanistan.

Primula floribunda Wall., Tent. Fl. Nepal. 43 t. 33 (1824-26).—Boiss., F. O. IV: 24 (1879).—Hooker f., F. B. I. III: 495, in Curtis's Bot. Mag. t. 6712 (1883).—Pax u. Knuth in Pflanzenreich Heft 22: 35 (1905).

subsp. **occidentalis** Wendelbo, l. c. 66.

Distr. sp. Afghanistan (Pushut, Nuristan), Himalaya: from Kashmir to Kumaon.

Primula nivalis Pallas var. **purpurea** (Watt) Kitamura in Fauna and Flora of Nepal Himalaya 119 (1955).

Primula macrophylla Don, Prodr. Fl. Nep. 80 (1825).—Wendelbo, l. c. 67.

Primula Moorcroftiana sensu Fedorov in Fl. URSS XVIII: 197, Tab. IX-3 (1952).

Distr. var. Afghanistan, Pakistan, Pam.-Al., Tibet, Himalayas.

Primula Olgaе Regel in Acta Horti Petrop. III, I: 151 (1874).—Fed., l. c. 185, Tab. VIII-4.—Wendelbo, l. c. 67.

Distr. Afghanistan, Pam.-Al., Tianshan.

Primula tibetica Watt in Journ. Linn. Soc. XX: 6 (1882).—Hooker f., F. B. I. III: 488.—Wendelbo, l. c. 67.

Distr. Afghanistan (Nuristan), Kashmir, Tibet.

Primula Warshenewskiana B. Fed. in Trav. Mus. Bot. Acad. St. Pétersb. I: 149 (1902).—Vassil. in Fl. URSS XVIII: 182 p. p. (1952).—Wendelbo in Univ. Berg. Arbok Naturvisten-skapelig rekke Nr. I: 7 (1957).

subsp. **rhodantha** (Balf. f. et W. W. Sm.) Wendelbo, l. c. 7 (1957), Symb. Afgh. IV: 68 (1959). **Fig. 35.**

Primula rhodantha Balf. f. et W. W. Smith in Note Roy. Bot. Gard. Edinb. IX: 39 (1915).

P. rosea subsp. *rhodantha* W. W. Sm. et Forrest, l. c. XVI: 25 (1928).

Primula rosea Aitch. (non Royle), J. L. S. XVIII: 77 (1880).

Nuristan: Between Chatrass and Kushimaicot (Aug. 2, 1955 S. K.), between Pushuki and Kushitaki (Aug. 4, 1955 S. K.)—post anth., Shabul Gul (Aug. 6, 1955 S. K.).

Very variable in size. The scape 1–50 cm long, with very pretty rosy flowers. Leaves 3–18 cm long. The writer collected this species several times in Nuristan.

Distr. Afghanistan.

Samolus Valerandi L., Sp. Pl. 443 (1753).—Aitch., J. L. S. XIX: 176.—Wendelbo, l. c. 74.

Pulikhumri (Jul. 3, 1955 S. K.).

Distr. Eurasia, Africa, Australia.

Plumbaginaceae

Acantholimon Auganum Bunge, Gattung Acanthol. 39 (1872).—Boiss., F. O. IV: 837.

Distr. Afghanistan (Reg. Kabul).

Acantholimon brachyphyllum Boiss. in DC., Prodr. XII: 628 (1848), F. O. IV: 846.

Distr. Afghanistan (Reg. Kabul).

Acantholimon^ecalocephalum Aitch. et Hemsl. in J. L. S. XVIII: 77 (1880), XIX: 175, pl. 22, figs. 1–4.

Distr. Afghanistan (Kuram).

Acantholimon cabulicum Boiss., in DC., Prodr. XII: 622 (1848), F. O. IV: 828.

Distr. Afghanistan

Acantholimon cephalotas Boiss., in DC., Prodr. XII: 622 (1848), F. O. IV: 827.

Distr. Afghanistan (Reg. Kabul).

Acantholimon diapiensoides Boiss. in DC., Prodr. XII: 624 (1848), F. O. IV: 830.—Lincz. in Fl. URSS XVIII: 318, Tab. XVII 3–3a (1952).

Distr. Afghanistan (Koh-i-Baba), Pamiro-Alai, Dzungaria-Kashgaria.

Acantholimon distachyum Boiss. in DC., Prodr. XII: 623 (1848), F. O. IV: 828.

Distr. Afghanistan (Reg. Kabul).

Acantholimon Ecae Aitch. et Hemsl. in T. L. S. n. III: 84, pl. 36 (1888).

Distr. Afghanistan (Badghis).

Acantholimon erinaceum (Jaub. et Spach) Lincz. in Fl. URSS XVIII: 370, t. XVIII—5, 5s (1952).

Acantholimon roseum Boiss., Diag. Ser. I, VII: 71 (1846).—F. O. IV: 853 (1879).

Statice erinacea Jaub. et Spach, Ill. Pl. Or. I: 163 (1842–3).

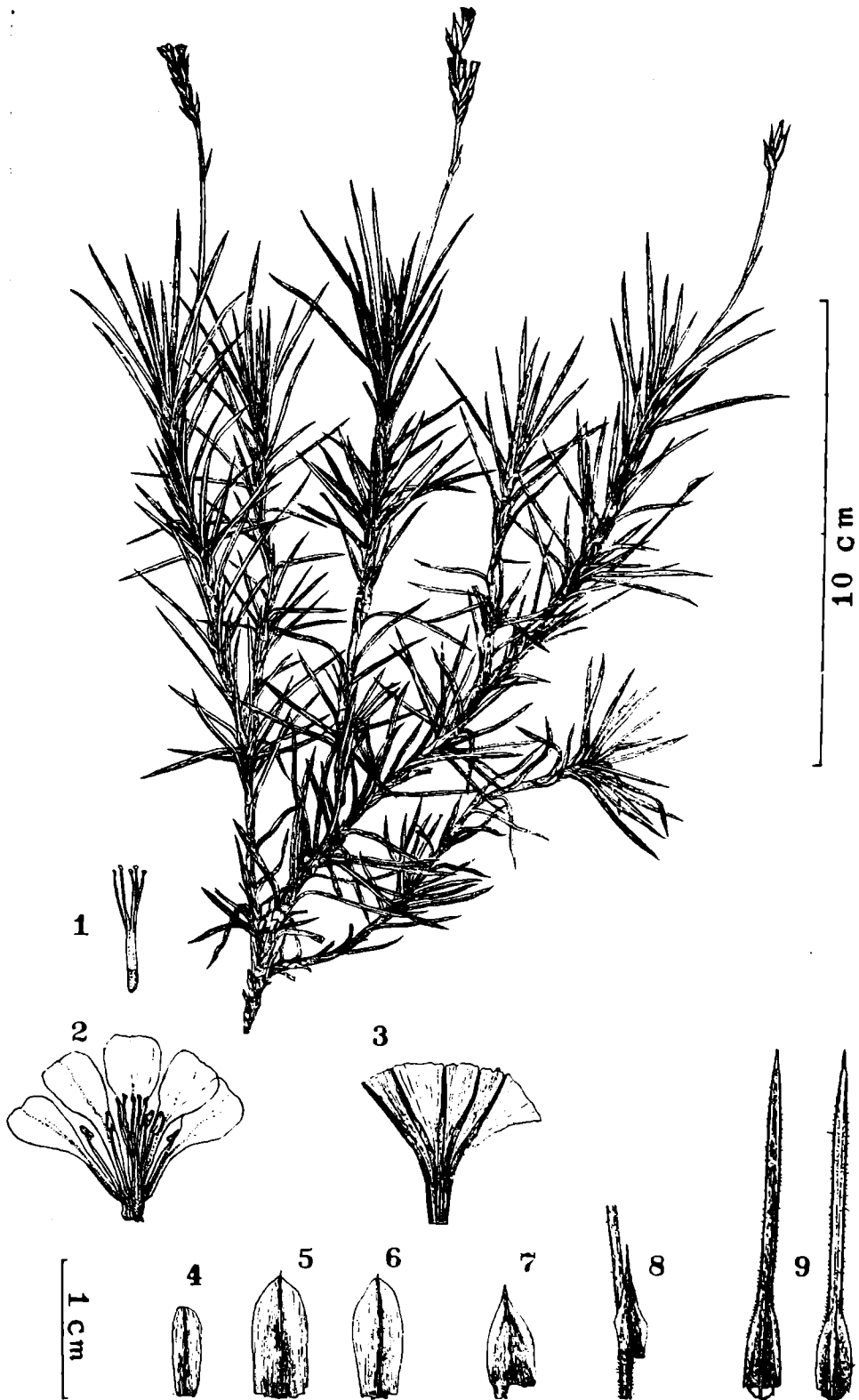


Fig. 82. *Acantholimon nuristanicum* Kitam.: 1 Pistil, 2 Flower, 3 Calyx, 4—8 Bracts, 9 Leaves. (Nuristan : Shabul Gul).

Distr. Central Asia: Gorn.-Turkm., Iran, Afghanistan.

Acantholimon fasciculare Boiss. in DC., Prodr. XII: 626, F. O. IV: 851.

Distr. Afghanistan (Shusgao).

Acantholimon Griffithianum Boiss. in DC., Prodr. XII: 623, F. O. IV: 829 (1879).

Distr. Afghanistan.

Acantholimon heratense Bunge, Gatt. Acanthol. 55 (1872).—Boiss., F. O. 548 (1879).

Distr. Afghanistan (near Herat).

Acantholimon leptostachyum Aitch. et Hemsl., J. L. S. XVIII: 76 (1880).

Distr. Afghanistan (Kuram, Drekalla).

Acantholimon longiflorum Boiss., Diag. Ser. II, IV: 63 (1859), F. O. IV: 849. Aitch., T. L. S. n. III: 85.

Distr. Afghanistan (Reg. Kabul, Badghis).

Acantholimon Munroanum Aitch. et Hemsl. in J. L. S. XVIII: 76 (1880).

Distr. Afghanistan (Kuram, Seratigah).

Acantholimon (§ Glumaria) **nuristanicum** Kitamura in Acta Phytotax. Geobot. XVI: 133 (1956). **Fig. 34, Fig. 82.**

Suffrutex. Caulis dense caespitosus 18–20 cm altus inferne procumbens superne ascendens, e basi ramosus, ramis ascendentibus, densissime foliatus, basibus foliorum vaginatis obtectus. Folia omnia homomorpha copiosa coriacea subtriquetra linearia persistentia, 4–4.5 cm longa 1 mm lata apice spinulosa margine sub lente minutissime scabra basi dilatata 3 mm lata margine membranacea caulem amplectentia. Scapi axillares, folia longiores 5–9 cm longi sub lente minute denseque scabri, ad medium bracteolati, bracteis 4–6 mm longis caulem amplectentibus. Spiculae 2-florae raro uniflorae in spicam 2.5–3 cm longam inferne laxam superne congestam dispositae. Spiculae bractea inferiora ovato-triangularia 6–7 mm longa glabra apice acuminata margine late membranacea dorso coriacea fuscata, bractea superiora 2, 8–8.5 mm longa obovato-oblonga apice rotundata late membranacea dorso costata mucronulata. Calyx infundibuliformis 11–11.5 mm longus, tubo hirsuto 5 mm longo, limbo glabro 1.5 mm diametro, albo, costis 5, atropurpureis, obsolete lobato-eroso longitudinaliter plicato.

Nuristan: Shabul Gul 3200 m among rocks (Aug. 6, 1955 S. K.).

Distr. Afghanistan: Nuristan, Pakistan.

Acantholimon peculiare Rechingerf in Österr. Bot. Zeit. XCV: 426 (1949).

Distr. Afghanistan.

Acantholimon polystachyum Boiss. in DC., Prodr. XII: 624 (1848), F. O. IV: 847 (1879).

Distr. Afghanistan (Reg. Kabul, near Karabagh).

Acantholimon speciosissimum Aitch. et Hemsl. in T. L. S. n. III: 85, Pl. XXXV (1888).

Distr. Afghanistan (Badghis).

Acantholimon subulatum Boiss. in DC., Prodr. XII: 629 (1848), F. O. IV: 845 (1879).

Distr. Afghanistan (Reg. Kabul).

Cephalorrhizum oopodum M. Pop. et Korov. in Tr. Turk. nauchn. obsch. I: 39 (1923).—Lincz. in Fl. URSS XVIII: 406, T. XX 3, 3a, 3b (1952).

Between Pulikhumri and Haibak (June 27, 1955 S. K.).

Distr. Pamiro-Alaiskii, Afghanistan.

The bracts of Afghan plants densely covered with white dots. *Cephalorrhizum* may be included in *Limonium*.

Limonium cabulicum (Boiss.) O. Kuntze, Rev. Gen. Pl. 395 (1891).

Statice cabulica Boiss. in DC., Prodr. XII: 666 (1848), F. O. IV: 871.—Clarke, F. B. I. III: 480.

Kabul, Koh-i-Asmai (April 2, 1955 O. Suzuka).

Distr. Afghanistan, Pakistan.

Limonium Griffithii (Aitch. et Hemsl.) O. Kuntze, Rev. Gen. Pl. 395 (1891).

Statice Griffithii Aitch. et Hemsl., J. L. S. XIX: 175, Pl. XXIII (1888).

Nuristan: Between Voma and Chatrass (Aug. 1, 1955 S. K.), between Seprigal and Voma (July 29, 1955 S. K.).

Distr. Afghanistan: Khybar, Kuram.

Limonium leptophyllum (Schrenk) Kuntze, Rev. Gen. 395 (1891).—Lincz. in Fl. URSS XVIII: 459 (1952).

Statice leptophylla Schrenk in Bull. Acad. Sc. Pétersb. III: 21 (1845).—Boiss., F. O. IV: 867 (1879).—Aitch., J. L. S. n. III: 86 (1888).

Distr. Central Asia: Aralo-Casp., Pribalxash., Syr-Dar., Tianshan, Afghanistan (W).

Limonium Meyeri (Boiss.) O. Kuntze, l. c. 395 (1891).—Lincz. in Fl. URSS XVIII: 439 (1952).

Statice Gmelini γ. *laxiflora* Boiss. in DC., Prodr. XII: 646 (1848), F. O. IV: 859.

Statice Meyeri Boiss. in DC., Prodr. XII: 645 (1848).

Distr. Eastern Europe, Caucasus, Central Asia, Asia Minor, Iran, Afghanistan.

Limonium macrorrhabdon (Boiss.) O. Kuntze, Rev. Gen. 396 (1891).

Statice macrorrhabdon Boiss., Diag. Ser. II, IV: 67 (1891), F. O. IV: 869 (1879).

Between Sarobi and Kabul (June 18, 1955 S. K.).

Distr. Afghanistan, Pakistan.

Limonium reniforme (Girard) Lincz. in Fl. URSS XVIII: 456 (1952).

Statice reniformis Girard in Ann. Sc. Nat. 3 sér. Bot. II: 325 (1844).

Statice perfoliata Kar. in Bull. Soc. Nat. Mosc. XII: 167 (1839)—nomen.—Ledeb., Fl. Ross. III 468 (1847–9).—Boiss., F. O. IV: 866 (1879).—Aitch., T. L. S. n.

III: 85.

Distr. Central Asia: Kara-Kum., Gorn.-Turkm., Amu-Dar., Syr-Dar., Pamiro-Al. Iran, Afghanistan.

Limonium spicatum (Willd.) O. Kunze, Rev. Gen. 396 (1891).

Statice spicata Willd., Sp. Pl. I: 1532 (1797).—Boiss., F. O. IV: 871.—Aitch., J. L. S. n. III: 861.

Psylliostachys spicata (Willd.) Nevski in Tr. Bot. Inst. An. SSSR ser. 1, IV: 314 (1937).—Linz. in Fl. URSS XVIII: 471, Tab. XXIII 5, 5a, 5b (1952).

Statice sisymbriifolia Jaub. et Spach, Ill. Pl. Or. I: 158, t. 87 (1842-3).

Distr. Eastern Europe, Caucasus, Central Asia, Iran, Afghanistan.

Limonium suffruticosum (L.) O. Kuntze, Rev. Gen. 396 (1891).—Lincz. in Fl. URSS XVIII: 458, Tab. XXII-3, 3. (1952).

Statice suffruticosum L., Sp. Pl.: 276 (1753).—Boiss., F. O. IV: 867 (1879).—Aitch., J. L. S. n. III: 85. Gmel., Fl. Sib. II: t. 88, f. 2, 3.

Distr. Eastern Europe, Caucasus, Western Siberia, Central Asia: Aralo-Casp., Pribalxash., Kyz.-Kum., Amu-Dar., Syr-Dar., Pamiro-Al., Iran, Afghanistan, Sungaria, Kashmir, Mongolia.

Plumbago zeylanica L., Sp. Pl. 151 (1753).

var. **glaucescens** Boiss. in DC., Prodr. XII: 693 (1848), F. O. IV: 875.

Distr. Afghanistan, Pakistan, Abyssinia.

Ebenaceae

Diospyros Lotus L., Sp. Pl. 1057 (1753).—Boiss., F. O. IV: 33.—Clarke, F. B. I. III: 555.—Aitch., J. L. S. XVIII: 78.—Rehder, Manual 2 ed. 759 (1940).

Distr. Asia Minor, Transcaucasia, Iran, Afghanistan, Pakistan, China: Hunan, Szechuan, Yunnan, Kuichau.

Diospyros Lotus is not wild in Japan (Kitamura, in T. B. M. LIX: 40). *Diospyros Lotus* might have been brought from China by caravans as dried food along the silk road. The writer did not see a wild plant in Afghanistan.

Oleaceae

Fraxinus raibocarpa Regel in Acta Horti Petrop. VIII: 685, t. 12 (1884).—Lingelsheim in Pflanzenreich Heft 72: 19, fig. 4a, b (1920).—Haeckel in Fedde, Rep. Beih. 108: 34 (1938).—Vassil. in Fl. URSS XVIII: 489, Tab. XXV-5 (1952).

Nuristan: Between Pushuki and Kushimaicot (Aug. 9, 1955 S. K.)—with fruits.

Distr. Pamiro-Al., Afghanistan.

Fraxinus Rehderi Haeckel in Fedde, Rep. Beih. 108: 33, Taf. 3 (1938).

Distr. Afghanistan (Nuristan).

The figure of leaves given by Haeckel coincide well with those of *F. raibocarpa*. From the description, *F. Rehderi* differs from *F. raibocarpa* by larger flowers. The

fruit of *F. Rehderi* is unknown.

Fraxinus sogdiana Bunge in Mém. Soc. Étrang. Acad. Pétersb. VII: 390 (1854).—Boiss., F. O. IV: 41.—Bornm. in Engler, Bot. Jahrb. LXVI: 273 (1934).—Vassil. in Fl. URSS XVIII: 502, Tab. XXV-10 (1952).

Distr. Pribalxash., Dzungarsko-Tarbagataiskii, Tianshan, Afghanistan (? according to Bornm.).

Fraxinus syriaca Boiss., Diag. Pl. Nov. Or. Ser. I, II: 77 (1849).—Lingelsheim in Pflanzenreich Heft 72: 53 (1920).—Rehder, Manual 2 ed. 774 (1940).—Vassil. in Fl. URSS XVIII: 498 (1952).

Fraxinus oxyphylla β . *oligophylla* Boiss., F. O. IV: 40.—Aitch., T. L. S. n. III: 86.

Fraxinus syriaca Boiss. var. *oligophylla* (Boiss.) Lingelsheim in Engler, Bot. Jahrb. XL: 222 (1908).—Haeckel in Fedde, Rep. Beih. 108: 34 (1938).

Distr. Greece, Asia Minor, Syria, Arm.-Kurd., Iran, Gorn.-Turkm., Afghanistan.

Fraxinus xanthoxyloides (Don) DC., Prodr. VIII: 275 (1844).—Boiss., F. O. IV: 41 (1879).—Aitch., J. L. S. XIX: 176.—Clarke in F. B. I. III: 606.—Rehder, Manual C. Trees and Shrubs 2 ed. 770 (1940).—Lingelsh. in Pflanzenreich Heft 72: 35 (1920).

Fraxinus xanthoxyloides Wall. num. List. no. 2833 (1830)—nom. nud.

Fraxinus xanthoxyloides α . *dimorpha* (Coss. et Dur.) Lingelsh., l. c. 36, Fig. 9E, F (1920) pro parte.—Haeckel in Fedde, Rep. Beih. 108: 34 (1938).

Nuristan: Between Pushuki and Kushimaicot (Aug. 9, 1955 S. K.)—with fruits.

Distr. Afghanistan, Pakistan: Quetta (May 27, 1955 S. K.), Himalaya: from Kashmir to Kumaon.

Jasminum officinale L., Sp. Pl. 7 (1753).—Aitch., J. L. S. XVIII: 78.—Boiss., F. O. IV: 43.—Clarke in F. B. I. IV: 603.—Kobuski in Journ. Arnold Arb. XIII: 160 (1932).—Rehder, Manual 2 ed. 792 (1940).—Vassil. in Fl. URSS XVIII: 524 (1952). Reich. Ic. 17, t. 1077, 1.

Jalalabad, cultivated in Garden (June 17, 1955 S. K.).

Distr. Caucasus, Iran, Pakistan, Himalaya, Burma, China: Yunnan, Szechuan.

Jasminum revolutum Sims in Bot. Mag. XLII: t. 1731 (1815).—Schneider, Ill. Hand. Laubh. II: 839, fig. 527 m-n, 528 g-i (1912).—Aitch., J. L. S. XVIII: 78.—Vassil. in Fl. URSS XVIII: 525 (1952).

Jasminum humile L.—C. B. Clarke in F. B. I. III: 602 pro parte.

Jasminum humile var. *revolutum* (Sims) Kobuski in Journ. Arnold Arb. XX: 407 (1939).—Rehder, Manual 2 ed. 793 (1940).

Nuristan: Between Chatrass and Voma (Aug. 11, 1955 S. K.)—wild, Kunduz, Experimental farm cult. (July 8, 1955 S. K.).

Distr. Afghanistan (E), Himalaya: from Kashmir to Nepal, Pamir, Alatau.

Inflorescence many flowered, leaflets 3-5, 1.5-5 cm long obtuse (not acuminate

nor acute).

Olea cuspidata Wall. ex DC., Prodr. VIII: 285 (1844).—Boiss., F. O. IV: 36.—Aitch., J. L. S. XVIII: 79.—Clarke in F. B. I. IV: 611.

O. ferruginea Royle, Ill. 257, t. 65, fig. 1 (1835).

Nuristan: Between Kandai and Seprigal (July 28, 1955 S. K.)—wild, with many fruits, Voma (July 30, 1955 S. K.)—wild with fruits.

Distr. Afghanistan, Pakistan.

Trees 5 m high. Leaves coriaceous oblong-lanceolate 6.5–8.5 cm long, 18–21 mm broad, apex apiculate cartilaginous, base shortly petioled, lower surface densely lepidote, upper surface pulverulento-pubescent. Fruits oblong 9 mm long.

This species is growing wild along Pech River in warm temperate region of Nuristan.

Syringa afghanica C. K. Schneider in Wein Ill. Gartztg. 105 (1903), Ill. Hand. Laubholz. II: 775, Fig. 786 r–u, 787 q–t (1911).—Lingelsch. in Pflanzenreich Heft 72: 90, Fig. 6–A (1920).

Syringa persica Aitch. (non L.), J. L. S. XVIII: 78.

Kabul, Tomb of Baber cultivated (July 14, 1955 S. K.)—fl.

Distr. Afghanistan, Pakistan (Kuram Valley).

As compared with the figure given by Lingelsch. our cultivated specimens differ by broader and petiolated leaves. But Schneider figured broad and petiolated leaves. The young shoots have opposite leaves. From the leaf-axes of the former year, short branches with fascicled leaves spring out.

Leaves oblong entire 2.8–5 cm long 1–1.5 cm broad apex obtuse or round, base cuneate, petiole 5–12 mm long, glabrous above, glanduloso-punctate beneath, margin entire. Some lower leaves pinnatisected 3–3.8 cm long, leaflets 5, narrowly oblong 3 cm long. Inflorescence few flowered 4 cm long. Calyx 1.8 mm long (with tooth) irregularly subulate dentate or subtruncate. Corolla 8–10 mm in diameter, tube 8 mm long. Capsule 11 mm long.

Bornmüller reported from Dar-ul-Aman cultivated *Syringa persica* var. *laciniata* Aitch. in Engler, Bot. Jahrb. LXVI: 232 (1934).

Syringa Emodi Wall. ex G. Don, Gen. Hist. Dichlam. Pl. IV: 51 (1838).—Royle, Ill. Him. Mts. 267: t. 65.—Lingelsch. in Pflanzenreich Heft 72: 79 (1920).—Aitch., J. L. S. XVIII: 78—fl. white.—Clarke in F. B. I. IV: 605.—Rehder, Manual 2 ed. 788 (1940).

Distr. Afghanistan (Kuram), Pakistan Himalaya: from Kashmir to Kumaon.

Loganiaceae

Buddleia crispa Benth., Scroph. Ind. 43 (1835).—Hooker f. in Curtis's Bot. Mag. t. 4793 (1854).—Aitch., J. L. S. XVIII: 79.—Hand.-Mzt., Symb. Sin. 947 (1936).—Rehder, Manual 2 ed.: 796 (1940).

B. paniculata Clarke, F. B. I. IV : 81 (1883) non Wallich (1820).

B. tibetica W. W. Smith in Rec. Bot. Surv. Ind. IV : 270 (1911).—Marguard in Kew Bull. 1930 : 205 (1930).

Distr. Afghanistan, Pakistan, Himalaya : from Kashmir to Bhutan, Burma, China : Yunnan, Szechuan. A Sino-Japanese element.

Gentianaceae

Centaurium Meyeri (Bunge) Druce in Rep. Bot. Exch. Cl. Brit. Isles 1916 : 613 (1919).—Gross. in Fl. URSS XVIII : 529 (1952).

Erythraea Meyeri Bunge in Ledeb., Fl. Alt. I : 210 (1829), Ic. t. 159.—Clarke in F. B. I. IV : 102 (1883).

Distr. Eastern Europe, North Africa, Asia Minor, Caucasus, Turkestan, Altai, Afghanistan, Pamiro-Al., Tianshan, Iran, Pakistan.

Centaurim pulchellum (Swartz) Druce, Fl. Oxf. 342 (1897).—Hegi, Ill. Fl. V₃ : 1968 (1927).—Gross. in Fl. URSS XVIII : 528 (1952).

Erythraea ramosissima Pers. var. *caspica* Fischer ex Aitch., J. L. S. XVIII : 79.—Clarke, F. B. I. IV : 101 (1883).

E. ramosissima Pers., Syn. I : 283 (1805).—Boiss., F. O. IV : 67 (1879).

Ghundy (June 15, 1955 S. K.).

Distr. Europe, North Africa, Caucasus, Central Asia, Turkestan to Tianshan and Pam-Al., Iran, Afghanistan, Pakistan.

Centaurium spicatum (L.) Fritsch in Mitt. Naturwiss. Ver. Wien : 97 (1907).—Gross. in Fl. URSS XVIII : 535 (1952).

Erythraea spicata Pers., Syn. I : 283 (1805).—Boiss., F. O. IV : 69.

Erythraea babylonica Griseb. in DC., Prodr. IX : 60 (1845).—Aitch., T. L. S. n. III : 87 (1888).—Clarke, F. B. I. IV : 102.

Distr. Europe, North Africa, Asia Minor, Mesopotamia, Iran, Afghanistan (W), Caucasus, Turkestan to Tianshan, Pamiro-Al., Pakistan.

Centaurium umbellatum Gilib., Fl. Lithuan. I : 135 (1781).—Hegi, Ill. Fl. V₃ : 1969 (1927).—Gross. in Fl. URSS XVIII : 533 (1952).

Erythraea Centaurium Pers., Syn. I : 283 (1805).—Boiss., F. O. IV : 68 (1879).—Aitch., J. L. S. XVIII : 79.

Between Siyagird and Charikar (July 11, 1955 S. K.).

Distr. Europe, North Africa, Caucasus, Turkestan, Altai, Iran, Afghanistan.

Erythraea was proposed as genera conservanda.

Gentiana aquatica L., Sp. Pl. 229 (1753).—Gross. in Fl. URSS XVIII : 579 (1952).

Gentiana prostrata Boiss., F. O. IV : 72 (1879) non Haenke, sec Gross.

Distr. Caucasus, Siberia, Turkestan, Sungaria, Siberia, Amer., Afghanistan.

Gentiana Kurroo Royle, Ill. Bot. Himal. 278, t. 68 f. 2 (1835).—Clarke in F. B.

I. IV: 117.—Bot. Mag. t. 6470.—Aitch., J. L. S. XIX: 177 (1883).

Distr. Pakistan (Kuram), Kashmir.

Gentiana micrantha Aitch. et Hemsl., J. L. S. XIX: 177, Pl. IX, fig. 1-5 (1882).

Distr. Afghanistan (Kuram).

Gentiana minutissima Boiss., F. O. IV: 71 (1879).

Distr. Afghanistan.

Gentiana Oliveri Grieseb., Gent. 278 (1839).—Boiss., F. O. IV: 76.—Gross. in Fl. URSS XVIII: 570 (1952).

Distr. Caucasus, Turkestan, Asia Minor, Armenia-Kurdistan, Iran, Afghanistan, Pakistan.

Gentiana pseudoaquatica Kusnez. in Acta Horti Petrop. XIII: 4: 63 (1893), XV, 3: 388 (1904).—Gross. in Fl. URSS XVIII: 580 (1952).—Wendelbo in Nytt Mag. Bot. I: 49 (1952).

Gentiana aquatica Aitch. (non L.), J. L. S. XIX: 177.—Clarke, F. B. I. IV: 110. p. p.

Nuristan: Between Pushuki and Kushitaki (Aug. 4, 1955 S. K.), Shabul Gul (Aug. 6, 1955 S. K.).

Distr. Western Siberia: Obisk, Alt., East Siberia to Dahuria, India, Himalayas, Mongolia, Manchuria, Tibet, Northern China.

Leaves with a reflexed mucro at the apex.

Gentiana umbellata M. B., Fl. Taur.-Cauc. III: 188 (1819).—Gross. in Fl. URSS XVIII: 611 (1952).

Gentiana aurea Aitch., J. L. S. XIX: 177.—Clarke, F. B. I. IV: 108 (1883) pro parte.

Nuristan: Between Kushimaicot and Pushuki (Aug. 3, 1955 S. K.)—corolla 9–19 mm long.

Distr. Caucasus, Afghanistan, Pakistan.

Lomatogonium carinthiacum (Wulf.) A. Br. in Fl. XIII: 221 (1830).—Reich., Fl. Germ. Excurs. II: 421 (1831).—Hegi, Ill. Fl. V₃: 1977 (1927).—Hara, Enum. Sp. Jap. I: 138 (1948).—Gross. in Fl. URSS XVIII: 620 (1952).

Pleurogyne carinthiaca (Wulf.) Grieseb., Gentian. 310 (1839).—Boiss., F. O. IV: 77.

Nuristan: Between Pushuki and Kushitaki (Aug. 4, 1955 S. K.).

Distr. Afghanistan Turkestan, Himalayas, China, Japan (alpine region), Europe, Caucasus, Siberia, Kamtchatka, North America.

Swertia cordata Wall. ex Clarke, F. B. I. IV: 123 (1883).—Buser in Boiss., F. O. Suppl. 347.

Ophelia cordata Don var. Aitch., J. L. S. XVIII: 80 (1880).

Distr. Afghanistan (Kuram), Pakistan, Himalaya: from Kashmir to Khasia Mts.

Swertia Kiharae Kitamura in Acta Phytotax. Geobot. XVI: 133 (1956). **Fig. 83.**



Fig. 83. *Swertia Kiharae* Kitam.: 1 Inflorescence, 2 Transversal section of Ovary, 3 Flower, 4 Petals, 5 Calyx lobes. (Nuristan: Eschtaway).

A *S. lactea* foliis basi breviter coalitis, a *S. graciliflora*, corolla ochroleuca, foveola unica, caule elatiore distinguenda.

Rhizoma perenne radicibus validis numerosis emittens. Caulis 32–55 cm altus erectus 2.5–4 mm diametro glaber inferne simplex superne anguste paniculatim ramosus, ramis brevibus ascendentibus. Folia radicalia sub anthesi viva rosulata spatulata vel oblanceolata 7.5–15 cm longa 1.4–2.6 cm lata apice obtusa basi sensim angustata margine integra utrinque glabra glaucoviridia subtrinervata, folia caulina pauca, inferiora opposita ut in folia radicalia, media opposita oblanceolata 2–6.5 cm longa 7–14 mm lata apice obtusa basi inter se breviter coalita, folia superiora ad inflorescentiam gradatim minora lanceolata basi breviter coalita. Flores 4–meri, anguste paniculatim dispositi, sub anthesi nutantes, pedunculis 7–12 mm longis. Calycis lobus 4, lanceolatus 4 mm longus apice acuminatus. Corollae lobus 4, oblongus 7–8.5 mm longus apice obtusus marginatus alboflavescens, basi foveis unica ambitu fimbriatis instructus. Stamina 4, filamentis 5 mm longis, antheris 2 mm longis. Ovarium 6 mm longum, stigmatibus 2, 0.4 mm longis.

Nuristan, Eschtaway (Shitve), 2550 m in wet place (Aug. 7, 1955 S. Kitamura)—Typus in Herb. Univ. Kyoto.

Distr. Afghanistan, Pakistan: Swat.

This is a beautiful *Swertia* with 4-merous yellowish white flowers. The pit at the base of each lobe is fimbriate.

Swertia petiolata Royle ex Don in T. L. S. XVII: 519 (1837).—Aitch., J. L. S. XVIII: 79.—Clarke, F. B. I. IV: 128.

Distr. Afghanistan, Pakistan, Kashmir.

Swertia purpurascens Wall. ex Clarke, F. B. I. IV: 121 (1883).

Ophelia Dalhousiana Grieseb., Gent. 313 (1839).—Aitch., J. L. S. XVIII: 50.

O. purpurascens D. Don in T. L. S. XVII: 526 (1837).

Distr. Pakistan (Kuram), Himalaya: from Kashmir to Kumaon.

Apocynaceae

Nerium indicum Miller, Gard. Dict. ed. 8 no. 21 (1768).

Nerium odorum Soland in Aiton, Hort. Kew. ed I, II: 297 (1789).—Hooker f., F. B. I. II: 48.

var. ***Kotschy*** (Boiss.) Kitamura in Acta Phytotax. Geobot. XVII: 45 (1957).

Nerium Kotschy Boiss., Diag. ser. I, VII: 21 (1846).

Nerium odorum Soland β . *Kotschy* Boiss., F. O. IV: 48.—Bornm. in Engler, Bot. Jahrb. LXVI: 233 (1934).

Distr. Iran, Afghanistan, Pakistan, India.

The writer observed *N. indicum* var. *Kotschy* with rose flowers and fruits along Pech River at Chagasarai, Afghanistan. The wild plants were 1–1.5 m high, while in Japan the cultivated plants (var. *indicum* not wild in Japan) attain 4–5 m high.

Unfortunately the writer missed the dried specimens of Afghanistan. The specimens of var. *Kotschyi* collected at Gilgit by S. Nakao have smaller (7.5–9.5 cm long) and more obtuse leaves than those of var. *indicum*.

Rhazya stricta Decne. in Ann. Sc. Nat. sér. II, IV: 80 (1835), in Jacquemont, Voy. Bot. t. 111 (1844).—Boiss., F. O. IV: 46 (1879).—Hooker f., F. B. I. III: 640 (1882).—Rech. f., Symb. Afgh. IV: 77 (1959).

Between Jalalabad and Sarobi (June 17, 1955 S. K.)—with fruits, between Sarobi and Jalalabad (June 16, 1955 S. K.).

Distr. Afghanistan, Pakistan, Arabia.

Trachomitum armenum Pobed. in Fl. URSS XVIII: 657, Tab. XXXV-1 (1952).

Apocynum armenum Pobed. in Not. Syst. Kom. XI: 131 (1949).

Apocynum venetum Aitch. (non L.), T. L. S. n. III: 87, Pl. XXXVII.

Native name, Dumb-i-roba, Kundar, Dumb-i-gosalla.

Distr. Caucasus, Armenia-Kurdistan, Iran, Afghanistan (W).

The bark of the creeping root-stock employed in tanning the leather skins used as water-bottles.

The figure given by Aitchison coincide well with that of *T. armenum* given by Pobed. The leaves are acuminate. The calyx lobes are short and obtuse.

Trachomitum venetum (L.) Woodson in Ann. Miss. Bot. Gard. XVII: 157 (1930).—Rech. f., l. c. 77.

var. **scabrum** (Bèg. et Bel.) Kitamura comb. nov.

Apocynum venetum var. *scabrum* Bèg. et Bel. in Mém. Acad. Lincei, sér. V, IX: 76 (1913).

Trachomitum scabrum (Russan) Pobed. in Fl. URSS XVIII: 659 (1952).

Apocynum scabrum Russ. in Fl. et Syst. I: 166 (1933).

Between Doab and Shibar, along Bamian River (July 10, 1955 S. K.).

Distr. Central Asia: Aralo-Casp., Kiz.-Kum., Kara-Kum, Pamiro-Al., Gorn.-Turkm., Iran, Afghanistan.

Stem 2 m high, branched. Leaves linear-oblong apex round mucronate, under-side on nerves and margin cartilaginosly scabrid. Panicle very beautiful. Flowers small 6 mm long.

Asclepiadaceae

Boucerosia Aucheriana Decaisne in DC., Prodr. VIII: 649 (1844).—Boiss., F. O. IV: 63.—Aitch., J. L. S. XIX: 177 (1882).—Hooker f., F. B. I. IV: 78 (1883).

Distr. Arabia, Iran, Afghanistan, Pakistan.

Calotropis procera (Willd.), R. Br. in Aiton, Hort. Kew. 2 ed. II: 78 (1811).—Wight, Ic. t. 1278.—Boiss., F. O. IV: 57.—Hooker f., F. B. I. IV: 18.—Aitch., J. L. S. XIX: 176.—Rech. f., Symb. Afgh. IV: 78 (1959).

Asclepias procera Willd., Sp. Pl. I: 1263 (1798).—Bot. Reg. t. 1792.

Jalalabad (June 16, 1955 S. K.).

Distr. Northern Africa, Arabia, Iran, Afghanistan, Pakistan, India, Ava.

Common in subtropical region. Stem tall juicy with large obovate amplexicauline leaves. Fruits large semi-lunate.

Cynanchum acutum L., Sp. Pl. 212 (1753).—Boiss., F. O. IV : 60 (1879).—Aitch., T. L. S. n. III : 87.—Pobedimova in Fl. URSS XVIII : 715 (1952).—Hooker f., F. B. I. IV : 24 (1883).—Rech. f., l. c. 78.

Doab (June 10, 1955 S. K.).

var. **longifolium** Boiss., F. O. IV : 60.—Rechinger f., l. c. 78.

Distr. sp. Mediterranean Reg., Caucasus, Central and Western Asia, Afghanistan, Kashmir.

Cynanchum cabulicum Bornm. in Engler, Bot. Jahrb. LXVI : 233 (1934).

Pagman near Kabul (July 15, 1955 S. K.), Kabul, Tomb of Baber (July 14, 1955 S. K.), between Seprigal and Kandai (Aug. 14, 1955 S. K.)—fruit.

Distr. Afghanistan.

Corolla puberulus inside. Leaves ovate apex acuminate base subcordate. Capsule 6 cm long 10–14 mm wide, puberulus.

Cynanchum canescens (Willd.) K. Schum. in Pflanzenfam. IV, 2 : 252 (1895).

Cynanchum glaucum Wall. in Wight, Contr. 58 (1834).—Hooker f., F. B. I. IV : 22.—Rech. f., Symb. Afgh. IV : 77.

Vincetoxicum canescens (Willd.) Decaisne in DC., Prodr. VIII : 523 (1844).—Boiss., F. O. IV : 52.

Asclepias canescens Willd., Nov. Act. Nat. Cur. III : 418 (1801).

Distr. Asia Minor, Mesopotamia, Iran, Afghanistan, Himalayas.

According to Rechinger f., the eastern race (*C. glaucum*) has smaller flowers.

Cynanchum Jacquemontii Decne.—*C. Jacquemontianum* Decne. in Jacquemont, Voy. Bot. 106 t. 112 (1844).

Cynanchum humile Falc. ex Aitch., J. L. S. XVIII : 79 nom. nud.

Endotropis Jacquemontii Decne. in DC., Prodr. VIII : 547 (1844).

Nuristan : Chatrass (Aug. 2, 1955 S. K.).

Distr. Afghanistan, Pakistan, Kashmir.

The correct name should be *Cynanchum Jacquemontii* Decne.

Cynanchum parviflorum (Decne.) K. Schum. in Pflanzenfam. IV, 2 : 252 (1895).

Vincetoxicum parviflorum Decne. in DC., Prodr. VIII : 525 (1844).

var. **alpina** Schott, ex Aitch., J. L. S. XIX : 176 (1882).

Distr. sp. Asia Minor, Afghanistan.

Daemia cordifolia (Retz.) K. Schum. in Abhandl. Preuss. Akad. Wiss. 17 (1894), in Pflanzenfam. IV, 2 : 258, Fig. 74 (1895).

Daemia extensa R. Br. in Mem. Wern. Soc. I : 50 (1809).—Aitch., J. L. S. XIX : 177.—Hooker f., F. B. I. IV : 20.—Kirt. & Basu, Indian Med. Pl. Pl. 623

(1918).

Cynanchum cordifolium Retz., Obs. II: 15 (1779–91).

Cynanchum extensum Jacq., Miss. II: 353 (1781).

Distr. Pakistan (Kuram), India, Burma, Malay Peninsula.

Daenia tomentosa (L.) Pomel, Nouv. Mat. Fl. Atl. 82 (1860).—Rech. f., l. c. 79.

Distr. Pakistan, Afghanistan, Iran, Arabia, North Africa.

Marsdenia erecta (L.) R. Br. in Mem. Wern. Soc. I: 31 (1809).—Rech. f., l. c. 79.

Distr. Mediterr. Reg., Iran, Afghanistan.

Pentatropis spiralis Decne. in Ann. Soc. Nat. 1838, 327, t. 11 E.—Boiss., F. O. IV: 58.—Aitch., J. L. S. XIX: 177.—Hooker f., F. B. I. IV: 19.—Kirt. & Basu, Ind. Med. Pl. Pl. 622 A (1918).

Distr. Pakistan (Kuram), Panjab, Arabia, North Africa.

Periploca hydaspidis Falc. in Proc. Linn. Soc. I: 115 (1841).—in Ann. & Mag. of Nat. Hist. VIII: 449.—Aitch., J. L. S. XIX: 176.—Hooker f., F. B. I. VII: 12.

Distr. Pakistan (Kuram).

Periploca aphylla Decne. in Jacquemont, Voy. Bot. 109, t. 116 (1844).—Boiss., F. O. IV: 50 (1879).—Aitch., J. L. S. XVIII: 79.—Hooker f., F. B. I. IV: 121.—Rech. f., l. c. 78.

Distr. Nubia, Arabia, Iran, Afghanistan, Pakistan.

Convolvulaceae

Calystegia sepium (L.) R. Br., Prodr. Fl. Nov. Holl. I: 483 (1810).—Rech. f., l. c. 82.

Distr. Temperate regions of the World.

Convolvulus affghanicus Vatke in Österr. Bot. Zeitsch. XXV: 168 (1875).

Distr. Afghanistan (Griffith n. 5857).

According to the description given by Vatke: Suffrutex divaricately branched, 2 dm high, branches spinous. Leaves oblongo-linear or linear 2–1 cm long, sessile. Peduncle 1–3 flowered, bibracteate, corolla densely hirsute, 5 times longer than calyx.

Convolvulus Aitchisoni C. B. Clarke, J. L. S. XIX: 179, F. B. I. IV: 218.

Distr. Afghanistan, Pakistan.

Convolvulus arvensis L., Sp. Pl. 153 (1753).—Aitch., J. L. S. XVIII: 82.—Clarke, F. B. I. IV: 219.—Grigor. in Fl. URSS XIX: 27 (1953).—Rechinger f., Symb. Afgh. IV: 80 (1959).

Nuristan: Eschtaway (Aug. 7, 1955 S. K.), Kandahar (June 6, 1955 S. K.), Kabul (July 18, 1955 S. K.).

Distr. Cosmopolitan.

Convolvulus erinaceis Ledeb. in Eichw., Casp. Cauc. 71, t. 7 (1831).—Aitch., T. L. S. n. III: 90.—Grigor. in Fl. URSS XIX: 16, Tab. I, Fig. 3 (1953).

Between Herat and Iranian frontier (July 7, 1955 K. Yamashita).

Distr. Iran, Aralo-Caspian Reg., Turkestan, Pamiro-Al., Afghanistan.



Fig. 84. *Convolvulus gonocladus* Boiss. subsp. *pyrrhotrichus* (Boiss.) Rech. f.: 1 Inflorescence, 2 Pistil, 3 Stamen, 4 Sepal, 5 Base of Stem. (Ghunoy).

Convolvulus fruticosus Pallas, Reise II. Anchang : 734 (1773).—Boiss., F. O. IV : 87 (1879).—Aitch., T. L. S. n. III : 90.—Grigor. in Fl. URSS XIX : 14 (1953).

C. brevispinus Jaub. et Spach, Ill. IV, t. 369.

Distr. Western Siberia : Irt., Central Asia : Aralo-Casp. to Pamiro-Al., Iran, Afghanistan.

Convolvulus glomeratus Chois. in DC., Prodr. IX : 401 (1845).—Boiss., F. O. IV : 102.—Wight, Ic. t. 1366.—Clarke in F. B. I. IV : 219 (1883).

Distr. From Abissynia, Arabia, Afghanistan (Kabul according to Clarke), Pakistan.

Convolvulus gonocladus Boiss. subsp. **pyrrhotrichus** (Boiss.) Rech. f., Symb. Afgh. IV : 80 (1959). **Fig. 84.**

Convolvulus pyrrhotrichus Boiss., Diag. Ser. II, III : 122 (1856).

C. Haussknechtii Boiss., F. O. I. IV : 102 quoad pl. afghan.

Ghunoy, between Kabul and Sarobi (June 15, 1955 S. K.).

Distr. sp. Iran, Afghanistan.

Convolvulus lineatus L., Syst. X ed. 923 (1759).—Boiss., F. O. IV : 97.—Aitch., J. L. S. XVIII : 82, T. L. S. n. III : 90.—Rech. f., l. c. 81.—Grigor. in Fl. URSS XIX : 26 (1953).

Distr. Europe, North Africa, Asia Minor, Caucasus, Mesopotamia, Iran, Afghanistan, Pakistan, Turkestan, Western Siberia : Upper Tobol.

Convolvulus pilosellaefolius Desr. in Lam., Encycl. III : 551 (1789).—Boiss., F. O. IV : 103.—Aitch., T. L. S. n. III : 91.—Grigor. in Fl. URSS XIX : 22 (1953).—Rech. f., l. c. 81.

15 km east from Kandahar (June 6, 1955 S. K.)—post anthesin.

Convolvulus pseudocantabulica Schrenk in Fischer et Mey., Enum. Pl. Nov. I : 21 (1841).—Aitch., J. L. S. XVIII : 82.—Boiss., F. O. Suppl. 348 (1888).—Grigor. in Fl. URSS XIX : 20 (1953).—Rech. f., l. c. 81.

Distr. Central Asia : Tarbagatai mountain, Tianshan, Pamiro-Al., Afghanistan.

Convolvulus rectangularis Rech. f., Symb. Afgh. IV : 82, Fig. 30 (1959).

Distr. Afghanistan.

Convolvulus Rotherianus Chois., Convol. Or. 95 (1834), in DC., Prodr. IX : 403.—Clarke in F. B. I. IV : 219.

Distr. India, Afghanistan (Clarke).

Convolvulus spinosus Burm., Fl. Ind. 47, tab. 19, fig. 4 (1768).—Boiss., F. O. VI : 87.—Rech. f., l. c. 82.

Distr. Iran, Afghanistan.

Convolvulus subhirsutus Regel et Schmalh. in Acta Horti Petrop. VI : 339 (1879).—Aitch., T. L. S. n. III : 91.—Grigor. in Fl. URSS XIX : 21 (1953).—Rech. f., l. c. 82. **Fig. 11.**

Between Pulikhumri and Haibak (June 27, 1955 S. K.).

A copiously branched shrub, abundant along the roadside. Flowers numerous

very beautiful.

Distr. Afghanistan, Iran, Tianshan, Syr-Dar., Pamiro-Alai.

Cressa cretica L., Sp. Pl. 223 (1753).—Boiss., F. O. IV : 114 (1879).—Aitch., T. L. S. n. III : 91.—Clarke, F. B. I. IV : 225.—Grigor. in Fl. URSS XIX : 2 (1953).—Rech. f., l. c. 82.

Distr. Pantropic.

Cuscuta approximata Babingt. in Ann. Mag. Nat. Hist. XIII : 254 (1844).—Grigor. in Fl. URSS XIX : 49 (1953).—Yuncker in Symb. Afgh. IV : 82.

C. planiflora var. *approximata* Engelm. in Trans. Acad. St.-Louis I : 465 (1859).—Boiss., F. O. IV : 116.

Distr. Europe, Northern Africa, Siberia to Altai, Sungaria, Asia Minor, Mesopotamia, Iran, Afghanistan, Pakistan, Turkestan to Tianshan, Pamiro-Al.

Cuscuta Balansae Boiss. et Reut. ex Engelm. in Trans. Acad. St. Louis I : 468 (1859).—Yuncker, l. c. 82 (1959).

Distr. Afghanistan, Asia Minor.

Cuscuta brevistyla A. Br. ex A. Rich., Tent. fl. abyss. II : 79 (1850).—Boiss., F. O. IV : 117 (1879).—Grigor. in Fl. URSS XIX : 55 (1953).—Yuncker, l. c. 82.

C. planiflora Clarke in F. B. I. IV : 227 (1883).

Distr. Abyssinia, Arabia, Caucasus, Pamiro-Al., Tianshan, Mesopotamia, Turkestan, Iran, Afghanistan, Pakistan.

Cuscuta campestris Yuncker in Mem. Torr. Bot. Club. XVIII, 2 : 138 (1932), in Symb. Afgh. IV : 83.—Grigor, l. c. 61.

Distr. Europe, Caucasus, Central Asia, North America.

Cuscuta chinensis Lam., Encycl. II : 222 (1790).—Boiss., F. O. IV : 120 (1879).—Clarke in F. B. I. IV : 226.—Yuncker, l. c. 83.

Lataband, Mullaomur on Labiatae (June 15, 1955 S. K.).

Distr. Mesopotamia, Iran, Afghanistan, Pakistan, Turkestan, India, China, Japan.

Cuscuta epithymum Murr. in L., Syst. Veg. XIII ed. 140 (1774).—Boiss., F. O. IV : 115.—Aitch., J. L. S. XVIII : 82.—Grigor. in Fl. URSS XIX : 45 (1953).

Nuristan : Between Kushimaicot and Pushuki on *Thymus serpyllus* subsp. *quiquecostatus* (Aug. 3, 1955 S. K.).

Distr. Europe, Asia Minor, Caucasus, Alaro-Casp., Pribalxash., Irtisch, Altai, Afghanistan.

Cuscuta europaea L., Sp. Pl. 124 (1753).—Boiss., F. O. IV : 117.—Clarke, F. B. I. IV : 227.—Grigor in Fl. URSS XIX : 52 (1953).—Yuncker, l. c. 83.

Nuristan : Shabul Gul on *Artemisia maritima* (Aug. 6, 1955 S. K.), between Pushuki and Kushitaki on *Pedicularis* and *Vicia* (Aug. 4, 1955 S. K.).

Distr. Europe, North Africa, Caucasus, Siberia to Lena, Central Asia, Asia Minor, Iran, Afghanistan, Himalaya : from Kashmir to Sikkim.

Cuscuta gigantea Griff. in Not. Pl. Asiat. I : 243 (1847).—Boiss., F. O. IV : 121.

- Clarke, F. B. I. IV : 226.—Grigor. in Fl. URSS XIX : 75.—Yuncker, l. c. 83.
 Nuristan : Between Pushuki and Kushimaicot on Sorbaria (Aug. 9, 1955 S. K.).
 Distr. Afghanistan, Kashmir, Tianshan, Pamiro-Al., Iran.
- Cuscuta Lehmanniana** Bunge in Mém. Acad. Sc. Pétersb. sér. VII : 220 (1851).—
 Grigor, l. c. 69.—Yuncker, l. c. 83.
 Distr. Central Asia, Afghanistan.
- Cuscuta monogyna** Vahl, Symb. II : 32 (1791).—Boiss., F. O. IV : 121.—Grigor. in Fl. URSS XIX : 67 (1953).—Yuncker, l. c. 83.
 Distr. Europe, Asia Minor, Caucasus, Western Siberia, Turkestan to Tianshan, Iran, Afghanistan.
- Cuscuta pedicellata** Ledeb., Fl. Alt. I : 293 (1829), Ic. pl. t. 234.—Grigor, l. c. 56.—Yuncker, l. c. 83.
 Distr. Eastern Europe, W. Siberia, Central Asia, Iran, Afghanistan.
- Cuscuta pulchella** Engelm. var. **affghanica** Engelm., Cusc. 24 (1860).—Boiss., F. O. IV : 120.
 Distr. Afghanistan.
- Cuscuta reflexa** Roxb., Pl. Corom. II : 3, t. 104 (1798).—Clarke, F. B. I. IV : 225.—Yuncker, l. c. 83.
 Distr. Afghanistan, India, Malaya.
- Evolvulus alsinoides** L., Sp. Pl. II ed. 392 (1762).—Boiss., F. O. IV : 113.—
 Aitch., J. L. S. XIX : 179.—Clarke, F. B. I. IV : 220.
 Distr. Pantropic, Pakistan (Kuram).

Borraginaceae

- Adenocaryum anchusoides** (Lindley) Brand in Fedde, Rep. XIII : 547 (1915), in Pflanzenreich Heft 78 : 77 (1921).—Bornm. in Engler, Bot. Jahrb. LXVI : 236 (1934).
Cynoglossum anchusoides Lindley in Bot. Reg. XXVIII : t. 14 (1842).
Paracaryum heliocarpum Kerner in Rev. Naturw. Vers. Innsbruck I : 105 (1870).
 —Clarke, F. B. I. IV : 161.—Hooker f. in Curtis's Bot. Mag. t. 7520 (1897).
Paracaryum anchusoides Benth. et Hooker f., Gen. Pl. II : 850 (1876).—Aitch., J. L. S. XVIII : 80.
Cynoglossum macrostylum Bunge in Lehm. Reliq. Bot. 412 (1847).—Boiss., F. O. IV : 266 (1875).
Lindefolia macrostylum (Bunge) Popov. in Fl. URSS XIX : 627, T. XXV—1 (1953).
 Pagman near Kabul (July 15, 1955 S. K.), between Siyagird and Charikar (July 11, 1955 S. K.), Shibar Pass (June 24, 1955 S. K.), Nuristan : Voma (July 31, 1955 S. K.).

A very beautiful plant growing abundantly near Kabul. Clarke and Popov distinguished *A. anchusoides* from *C. macrostylum* or *P. heliocarpum* by soft hairs and

larger nutlets.

Distr. Afghanistan, Turkestan, Pamir, Kashmir, Tibet, Kashgar.

Anchusa italica Retz., Obs. I: 12 (1779).—Boiss., F. O. IV: 154.—Aitch., T. L. S. n. III: 90.—Pop. in Fl. URSS XIX: 306 (1953).

Dal-ul-Aman, Kabul (July 18, 1955 S. K.), Pagman near Kabul (July 15, 1955 S. K.), Zerni (Sept. 2, 1955 T. Umesao).

Distr. Mediterranean Region to Iran, Afghanistan.

This species might have been naturalized in Afghanistan, was growing near the gardens, but not cultivated.

Arnebia Griffithii Boiss., Diagn. Ser. II, III: 135 (1856).—F. O. IV: 213.—Clarke, F. B. I. III: 176.—Hooker f. in Curtis's Bot. Mag. t. 5266 (1861).

Lithospermum Griffithii (Boiss.) Johnst. in Journ. Arnold Arb. XXXII: 326 (1952).

Echioides Griffithii (Boiss.) Rothm. in Fedde, Rep. XLIX: 56 (1940).

Between Pulikhumri and Haibak (June 27, 1955 S. K.).

Distr. Afghanistan, Pakistan: Abbottabad (March 9, 1952 O. Suzuka).

A very beautiful plant growing on meadows.

Arnebia linearifolia DC., Prodr. X: 95 (1846).—Boiss., F. O. IV: 214.—Aitch., T. L. S. n. III: 90.—Pop. in Fl. URSS XIX: 182 (1953).

Lithospermum Aucheri Johnst. in Journ. Arnold Arb. XXXIII, 4: 328 (1952).

Distr. From Egypt to Iran, Armenia, Afghanistan, Pakistan.

Asperugo procumbens L., Sp. Pl. 138 (1753).—Boiss., F. O. IV: 275.—Aitch., J. L. S. XVIII: 81, T. L. S. n. III: 90.—Clarke, in Hooker f., F. B. I. III: 167.—Pop. in Fl. URSS XIX: 530 (1953).—Kitamura in Fauna and Flora of Nepal Himalaya 208 (1955).

Distr. Europe, North Africa, Siberia, Asia Minor to Afghanistan, Turkestan, Pakistan, Himalayas.

Caccinia crassifolia O. Kuntze in Acta Horti Petrop. X: 212 (1887).—Bornm. in Engler, Bot. Jahrb. LXVI: 237 (1934).—Pop. in Fl. URSS XIX: 686 (1953).

Caccinia macranthera Brand. var. *crassifolia* (Vent.) Brand in Pflanzenreich Heft 78: 92 (1921).

Caccinia glauca Savi, Cose Bot. I: t. I, f. 1-6 (1832).—Boiss., F. O. IV: 277.—Aitch., T. L. S. n. III: 88.

Distr. Caucasus, Iran, Afghanistan, Pakistan.

Cynoglossum glochidiatum Benth. in Royle, Ill. Him. Mount. 306 (1836).—Lindley in Bot. Reg. XXVII: t. 15 (1841).—DC., Prodr. X: 150 (1849).—Aitch., J. L. S. XVIII: 80.—Clarke, F. B. I. IV: 156.—Brand in Pflanzenreich Heft 78: 133 (1921).—Hand.-Mzt., Symb. Sin. 823 (1936).—Kitamura in Fauna and Flora of Nepal Himal. 208 (1955).

Cynoglossum denticulatum DC., Prodr. X: 150 (1846).—Aitch., J. L. S. XIX: 173 (1882).

Paracynoglossum denticulatum M. Pop. in Fl. URSS XIX : 674 (1935).

Cheston, Kabul (July 14, 1955 S. K.), Pagman near Kabul (July 15, 1955 S. K.), Charikar (June 23, 1955 S. K.), Nuristan : Between Seprigal and Voma (Aug. 29, 1955 S. K.), Chatrass (Aug. 2, 1955 S. K.).

Distr. Afghanistan, Pakistan, Turkestan, India, Himalayas, Tibet, Khasia, Assam, China.

Popov distinguished Asiatic genus *Paracynoglossum* by the nutlet without stylar appendage.

Cynoglossum lanceolatum Forsk., Fl. Aegypt. Arab. 41 (1775).—Brand in Pflanzenreich Heft 78 : 137 (1921).—Clarke, F. B. I. IV : 156.—Hand.-Mzt., Symb. Sin. 824 (1936).

Distr. Africa, Arabia, Afghanistan, Himalayas, Assam, Philippines, Formosa, China.

The difference between *C. glochidiatum* and *C. lanceolatum* is not clear, because the Afghan specimens enumerated above as *C. glochidiatum* have fornices broader than long.

Brand mentioned *Cynoglossum zeylanicum* from Kabul, Afghanistan after Clarke (in Pflanzenreich Heft 78 135).

Ehretia obtusifolia Hockst. ex DC., Prodr. IX : 507 (1845).—Boiss., F. O. IV : 124 (1879).—Aitch., J. L. S. XVIII : 177.—Clarke, F. B. I. III : 143.

Distr. From Abyssinia to Pakistan, not yet recorded from Afghanistan.

Eritricum rupestre (Pallas) Bunge, Suppl. Fl. Alt. 14 (1836).—DC., Prodr. X : 126 (1846).—Brand in Pflanzenreich Heft 97 : 191 (1931).—Pop. in Fl. URSS XIX : 501 (1953).

Myosotis rupestre Pallas, Reise III : 716 n. 71, t. E, f. 3 (1776).

Nuristan : Between Voma and Chatrass (Aug. 1, 1955 S. K.).

var. ***pectinata*** (Pallas) Brand, l. c. 192 (1931).

Eritricum strictum Decne. in Jacquemont, Voy. Bot. 125 (1844).—Aitch., J. L. S. XIX : 178 (1882).—Clarke, F. B. I. III : 164.

Eritricum longifolium Decne., l. c. 124, t. 129.

Nuristan : Between Voma and Chatrass (Aug. 1, 1955 S. K.).

Distr. Siberia, Mongolia, Turkestan, Afghanistan, Pakistan, Himalayas, North China, Manchuria, Korea.

As this species is very variable, it is difficult to distinguish varieties.

Gastrocotyle hispida Bunge, Del. sem. h. Dorpat (1849), in Mém. Sav. Étrang. Pétersb. VII : 405 (1851).—Clarke, F. B. I. IV : 168.—Brand in Pflanzenreich Heft 97 : 101 (1931).—Gusleae in Fedde, Rep. XXIX : 115, tab. CXI (1931).—Pop. in Fl. URSS XIX : 316 (1953).

Anchusa hispida Forsk., Fl. Aegypt. Arab. 40 (1775).—Boiss., F. O. IV : 158.

Ghunoy near Sarobi (June 15, 1955 S. K.).

Distr. North Africa, Syria, Iran, Afghanistan, Pakistan, Turkestan.

Hackelia glochidiata (Wall.) Brand in Pflanzenreich Heft 97: 119 (1931).

Paracaryum glochidiatum Benth. et Hooker f., Gen. Pl. II: 850 (1876).—Aitch., J. L. S. XVIII: 80.

Lappula glochidiata (Wall.) Brand in Fedde, Rep. XIV: 146 (1915).—Kitamura in Fauna and Flora of Nepal Himal. 208 (1955).

Distr. Pakistan (Kuram-Shendtoi), Himalaya: from Kashmir to Sikkim.

Heliotropium biannulatum Bunge in Bull. Soc. Nat. Mosc. XLII: 300 (1869).—Boiss., F. O. IV: 135 (1879).

Distr. Afghanistan (Kabul).

Heliotropium cabulicum Bunge in Bull. Soc. Nat. Mosc. XLII, I: 328 (1869).—Boiss., F. O. IV: 143.—Aitch., J. L. S. XIX: 177, T. L. S. n. III: 88.

Between Siyagird and Charikar (July 11, 1955 S. K.), Lataband, Mullaomur (June 15, 1955 S. K.).

Distr. Afghanistan, Pakistan.

Heliotropium chorassanicum Bunge in Bull. Soc. Nat. Mosc. XLII, I: 301 (1869).—Boiss., F. O. IV: 129.—Aitch., T. L. S. n. III: 88.—Pop. in Fl. URSS XIX: 137 (1953).

Distr. Afghanistan (W), Iran, Turkestan.

Heliotropium dasycarpum Ledeb. ex Eichw., Pl. Nov. Casp.-Cauc. 11, t. 5 (1831).—Boiss., F. O. IV: 140.—Clarke, F. B. I. IV: 148.—Pop. in Fl. URSS XIX: 125 (1953).

Distr. Iran, Afghanistan, Turkestan, Pakistan: Quetta (May 27, 1955 S. K.), Qila Abdullah (May 28, 1955 S. K.), Turkestan, Sungaria.

Heliotropium Eichwaldii Steud., Nom. ed II, I: 744 (1840).—Boiss., F. O. IV: 131.—Aitch., J. L. S. XIX: 178, T. L. S. n. III: 88.—Clarke, F. B. I. IV: 149.

Heliotropium ellipticum Ledeb. in Eichw., Pl. Casp.-Cauc. 10 (1831) non R. Br. 1814.—Pop. in Fl. URSS XIX: 147 (1953).

Distr. Asia Minor, Arabia, Caucasus, Southern Russia, Turkestan, Iran, Afghanistan, Pakistan: Sungaria, Australia.

Very abundant and common herb in Afghanistan. The calyx is persistent.

Heliotropium Griffithii Boiss., Diag. Ser. II, III: 131 (1856).—F. O. IV: 135. Distr. Afghanistan.

Heliotropium lasiocarpum Fischer et Mey., Ind. Sem. Horti Petrop. IV: 38 (1837).—Boiss., F. O. IV: 131.—Bornm. in Engler, Bot. Jahrb. LXVI: 234 (1934).

Heliotropium Eichwaldii Steud. var. *lasiocarpum* Clarke, F. B. I. IV: 150.

Kandahar (June 8, 1955 S. K.), Tomb of Baber (July 14, 1955 S. K.), between Kabul and Sarobi (June 15, 1955 S. K.), Kunduz (July 8, 1955 S. K.).

Distr. Caucasus, Central Asia, Iran, Pakistan: Chaman (June 2, 1955 S.K.).

Heliotropium persicum Lam., Encyc. III: 94 (1789).—Boiss., l. c. 147.

Heliotropium undulatum Vahl, Symb. Bot. I: 13 (1799).—Boiss., F. O. IV:

147.—Clarke, F. B. I. IV : 150.

Heliotropium affghanicum Boiss., F. O. IV : 143 (1879).

Distr. Arabia, Assyria, Iran, Afghanistan, Pakistan : Karachi (May 17, 1955 S. K.).

Heliotropium rariflorum Stocks in Hook., Kew. Journ. IV : 174 (1852).—Boiss., F. O. IV : 144.—Clarke, F. B. I. IV : 152 (1883).

Distr. Egypt, Socotra, Afghanistan (after Clarke), Pakistan.

Heterocaryum echinophorum (Pall.) Brand in Pflanzenreich Heft 97 : 95 (1931).—Popov in Fl. URSS XIX : 544 (1953).

Echinospermum Szovitsianum Fisch. et Mey., Index. Sem. Horti Petrop. II : 36 (1835).—Boiss., F. O. IV : 247.

Echinospermum minimum Lehm., Pl. Asperif. II : 126, 127 (1818).—Clarke, F. B. I. IV : 162.—Aitch., T. L. S. n. III : 89.

Myosotis echinophora Pallas, Reise III : 717, app. n. 71, t. 1, f. 1 (1776).

Distr. Asia Minor, Assyria, Iran, Afghanistan, Pakistan, Turkestan, Transcaspia, Astrakhan.

Heterocaryum oliganthum (Boiss.) Bornm. in Beih. Bot. Centr. LIX : 306 (1939).—Pop. in Fl. URSS XIX : 546 (1953).

Echinospermum oliganthum Boiss., F. O. IV : 248.—Aitch., T. L. S. n. III : 89.

Heterocaryum echinophorum var. *oliganthum* Brand in Pflanzenreich Heft 97 : 97 (1931).

Distr. Iran, Afghanistan (W), Turkestan, Pakistan.

Kuschakewiczia turkestanica Regel et Smirnow, Desc. Pl. Nov. Turk. fasc. VI : 51 (1878), in Acta Horti Petrop. V : 625 (1878).—Aitch., T. L. S. n. III : 88.—Brand in Pflanzenreich Heft 78 : 160 (1921).

Solenanthus turkestanicus (Reg. et Smirn.) Kusn. in Fl. Cauc. Crit. IV, II : 141 (1913).—Macbride in Proc. Amer. Acad. LI : 543 (1916).—Popov in Fl. URSS XIX : 644 (1953).

Distr. Afghanistan, Turkestan, Iran.

Lappula barbata Gürke in Pflanzenf. IV, 3a : 107 (1897).—Brand in Pflanzenreich Heft 97 : 140 (1931).—Pop. in Fl. URSS XIX : 461 (1953).

Echinospermum barbatum Lehm., Pl. Asperif. II : 128 (1818).—Aitch., J. L. S. XVIII : 80, T. L. S. n. III : 89.—Clarke, F. B. I. IV : 163.

var. **cariensis** Brand in Pflanzenreich Heft 97 : 141 (1931).

Echinospermum barbatum β. *cariense* Boiss., F. O. IV : 250.

Between Bulola and Doab (June 25, 1955 S. K.)—flowers small 3 mm in diameter.

Distr. var. Asia Minor, Armenia, Iran, Afghanistan, Pakistan, Himalaya : from Kashmir to Kumaon.

Lappula echinata Gilib., Fl. lithuan. 25 (1781).—Bornm. in Engler, Bot. Jahrb. LXVI : 235 (1934).—Brand in Pflanzenreich Heft 97 : 137 (1931).—Pop. in Fl. URSS XIX : 449 (1952).

Echinospermum Lappula Lehm., Pl. Asperif. II: 121 (1818).—Boiss., F. O. IV: 249.—Aitch., J. L. S. XVIII: 80, T. L. S. n. III: 89 (1888).

Distr. Europe, North Africa, Central Asia, Siberia to Kamtchatka.

Lappula microcarpa (Ledeb.) Gürke in Pflanzenfam. IV, 3a: 107 (1893).—Brand in Pflanzenreich Heft 97: 142, Fig. 15 A–E (1931).—Pop. in Fl. URSS XIX: 462 (1953).

Echinospermum microcarpum Ledeb., Fl. Alt. I: 202 (1829), Ic. Fl. Ross. II: t. 183 (1830).—Boiss., F. O. IV: 251.

Distr. Altai, Sungaria, Tianshan, Turkestan, Aralo-Casp., Afghanistan, Asia Minor, Armenia, Iran,

var. **micrantha** Bornm. in Engler, Bot. Jahrb. LXVI: 235 (1933).

Distr. var. Afghanistan.

Lappula Redowskii (Hornem.) Green in Pittonia II: 182 (1891).—Brand in Pflanzenreich Heft 97: 146 (1931).

Myosotis Redowskii Horn., Hort. Haf. I: 174 (1813).

Lappula intermedia (Ledeb.) Pop. in Fl. URSS XIX: 440 (1953).

Echinospermum intermedium Ledeb., Fl. Alt. I: 199 (1829), Ic. Fl. Ross. II: t. 180 (1830).

Distr. Asia Minor, Afghanistan, Turkestan, Sungaria, Siberia, Transbaicalia.

Lappula semiglabra (Ledeb.) Gürke in Pflanzenfam. IV, 3a: 107 (1897).—Popov in Fl. URSS XIX: 430 (1953).

Lappula Redowskii var. *patula* subv. *semiglabra* (Ledeb.) Brand in Pflanzenreich Heft 97: 149 (1931).

Echinospermum semiglabrum Ledeb., Fl. Alt. I: 204 (1829), Ic. Fl. Ross. I: t. 28 (1829).—Clarke, F. B. I. IV: 163.—Boiss., F. O. IV: 251.

Distr. Astrakhan, Transcaspia, Turkestan, Semipalachinsk, Altai, Armenia, Afghanistan, Kashmir.

Lappula sessiliflora (Boiss.) Gürke in Pflanzenfam. IV, 3a: 107 (1897).—Brand in Pflanzenreich Heft 97: 144, 145, Fig. 15, F–J (1931).—Popov in Fl. URSS XIX: 477 (1953).

Echinospermum sessiliflorum Boiss., Diag. Pl. Or. I, II: 144 (1849), F. O. IV: 253 (1879).—Aitch., T. L. S. n. III: 89.

Distr. Mesopotamia, Caucasus, Iran, Afghanistan, Turkestan, Pakistan.

Lappula sinaica (DC.) Aschers. ex Schweinf. in Mém. Inst. Egypt. II: 111 (1887).—Brand in Pflanzenreich Heft 97: 144 (1931).—Popov in Fl. URSS XIX: 475 (1953).

Echinospermum sinaicum DC., Prodr. X: 141 (1846).—Boiss., F. O. IV: 251 (1875).—Aitch., T. L. S. n. III: 89.

Distr. Sinai, Arabia, Iran, Caucasus, Afghanistan, Turkestan, Pakistan.

Lappula stricta (Ledeb.) Gürke in Pflanzenfam. IV, 3a: 107 (1897).—Popov in

Flora URSS XIX: 438 (1953).

Echinosperrum brachysepalum Claus in Beitr. Pflanzenk. russ. Reiches VIII: 240 (1851).—Aitch., T. L. S. n. III: 89.

Echinosperrum strictum Ledeb., Fl. Alt. I: 200 (1829), Ic. Fl. Ross. I: 27 (1829).

Lappula Redowskii Brand in Pflanzenreich Heft 97 (1931) pro min. parte.

Distr. Astrakhan, Western Siberia, Turkestan, Afghanistan.

Lithosperrum arvense L., Sp. Pl. 132 (1753).—Boiss., F. O. IV: 216 (1879).—Aitch., J. L. S. XVIII: 81 (1880).—Bornm. in Engler, Bot. Jahrb. LXVI: 235 (1934).—Clarke, F. B. I. IV: 175 (1883).—Pop. in Fl. URSS XIX: 165 (1953).

Shishigar (June 11, 1955 S. K.).

Distr. Eurasia, from England to Japan.

Lithosperrum officinale L., Sp. Pl. 132 (1753).—Boiss., F. O. IV: 218 (1879).—Aitch., J. L. S. XVIII: 81, T. L. S. n. III: 90.—Clarke, F. B. I. IV: 175.—Johnston in Journ. Arnold Arb. XXXIII: 342 (1952).—Pop. in Fl. URSS XIX: 163 (1953).—Hara in Journ. Fac. Sci. Univ. Tokyo III, VI (7): 365 (1956).

Between Siyagird and Charikar (July 11, 1955 S. K.).

Distr. Europe, Asia Minor, Caucasus, Central Asia, Siberia to Baikal, Iran, Afghanistan, Kashmir.

L. officinale subsp. *erythrorhizon* is distinguished from subsp. *officinale* by the longer patent hairs and larger corollas. This is distributed in Dahuria, Amur, Ussuri, China, Manchuria, Korea, Hokkaido, and Japan.

Our Afghan specimens have appressed hairs and small corollas. Johnston reported specimens with spreading hairs from Afghanistan. Aitchison reported *L. erythrorhizon* S. et Z. from Kuram. This may be the form mentioned by Johnston.

Lithosperrum tenuifolium L. f., Suppl. 130 (1781).—Boiss., F. O. IV: 217.—Aitch., T. L. S. XVIII: 90.—Clarke, F. B. I. IV: 175.—Pop. in Fl. URSS XIX: 164 (1953).

Distr. Mediterranean Reg., Astrakhan, Caucasus, Turkestan, Iran, Afghanistan, Pakistan.

Lycopsis orientalis L., Sp. Pl. 139 (1753).—Pop. in Fl. URSS XIX: 313 (1953).

Anchusa orientalis Reichb., Ic. Fl. Germ. XVIII: 63, t. 109, II (1858).—Boiss., F. O. IV: 161.

Lycopsis arvensis Aitch. (non L.), J. L. S. XIX: 178, T. L. S. n. III: 90.—Clarke, F. B. I. IV: 169.

Shibar Pass (June 24, 1955 S. K.), Doab (June 24, 1955 S. K.), between Doab and Pulikhumri (June 26, 1955 S. K.), Pagman near Kabul (July 15, 1955 S. K.), between Bulola and Doab (June 25, 1955 S. K.).

Distr. Eastern Europe, Caucasus, Asia Minor, Armenia, Iran, Afghanistan, Pakistan.

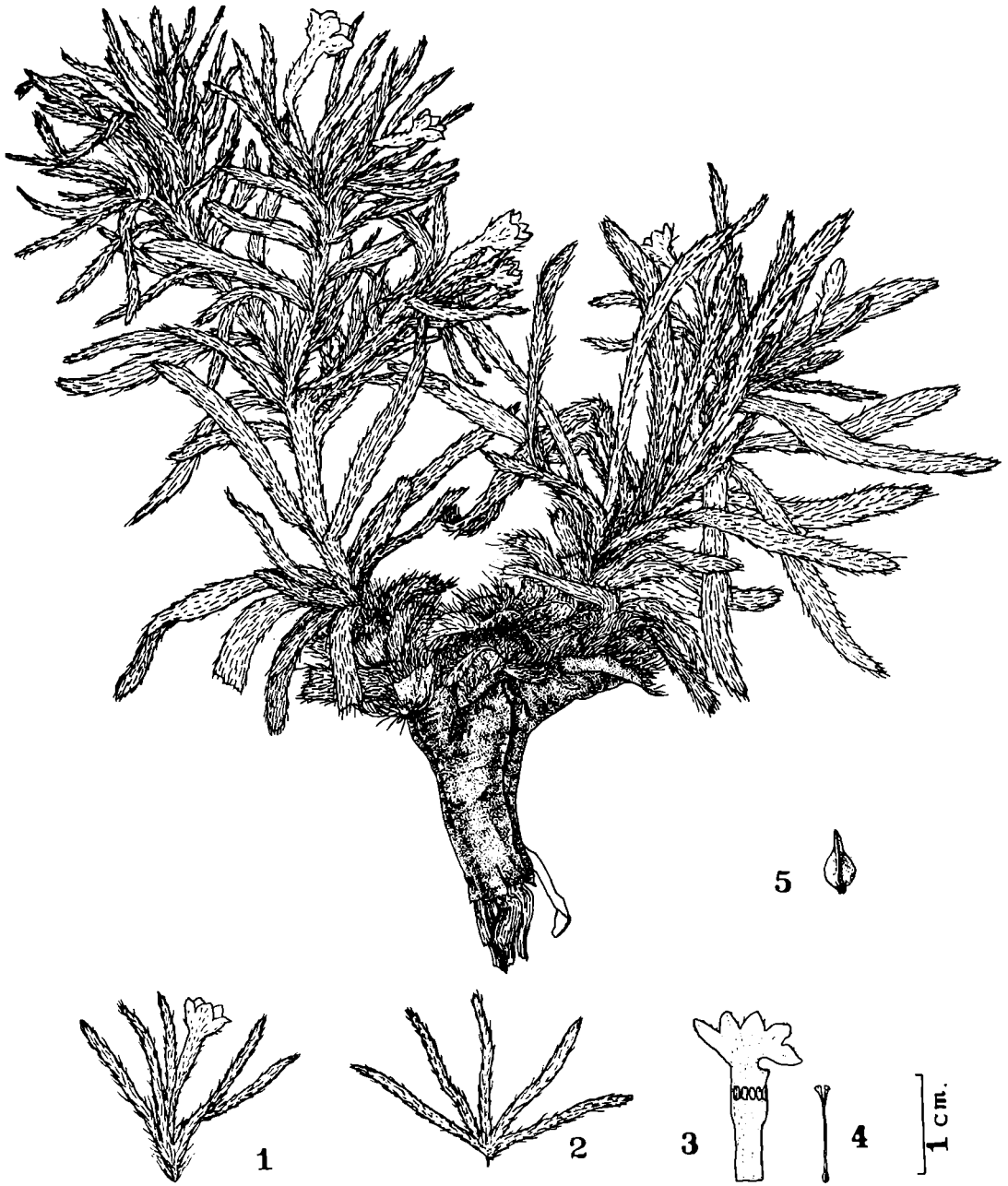


Fig. 85. *Macrotomia afghanica* Kitam.: 1 Flower, 2 Calyx, 3 Corolla and Anthers, 4 Pistil, 5 Fruit. (Between Sarobi and Kabul).

This may be treated as *L. arvensis* subsp. *orientalis* Kusnez. The size of the corolla is variable. Some corollas of Afghan plants are 7 mm long.

Macrotomia afghanica Kitamura in Acta Phytotax. Geobot. XVI: 134 (1956). Fig. 85.

Species *M. Linderbergianae* affinis a qua floribus minoribus divergit.

Perennis. Radix lignescens incrassata fusco-corticata, ad collum basibus foliorum anni praecedenti dense obiecta. Caulis pluris ascendens vel erectus 6–7 cm altus inferne simplex superne parce ramosus, 1.8–2 mm diametro, pilis sordide albis brevibus retroflexis copiosis et pilis albis 2 mm longis patentibus vestitus. Folia radicalia caulis sterilis sub anthesi viva lineari-lanceolata 20–25 mm longa 2.5–3.5 mm lata apice acutiuscula basi sensim angustata margine integra utrinque pilis albis adpressis brevibus et longis apice acutis dense vestita, textura coriacea. Folia caulina lineari-lanceolata 10–12 mm longa 2.5 mm lata apice acutiuscula basi sessilia utrinque strigosa. Inflorescentia cymosa apices caulis aut ramorum capitato-congesta, 3 cm longa et lata, bracteis linearibus 12 mm longis apice obtusis. Flores 4–9, breviter pedicellati, pedicellis 1.2 mm longis. Calyx sub anthesi 13 mm longus demum 18 mm longus, tubo sub anthesi obovato 3.5 mm longo basi turbinato in fructu 5.5 mm longo, laciniis 5, linearibus sub anthesi 12 mm longis demum 13 mm longis, apice acutiusculis dense hispidis. Corolla hypocraterimorpha 13 mm longa apice 3.5 mm lata, extus pilis brevibus copiosis et longis paucis hirsuta, lobis 5.2 mm longis rotundatis, intus glabra. Stylus 8.5 mm longus apice breviter bilobus. Antherae 1.5 mm longae. Nucula saepe 1, ovata apice acuminata 5–6 mm longa unicostata basi rotundata 3.5 mm lata sub lente minute tuberculata, areola basilaris.

Prov. Kabul, Lataband, Mullaomur, in dry place 2200 m (June 15, 1955 S. Kitamura)—Typus in Herb. Univ. Kyoto, between Sarobi and Kabul 2800 m (June 18, 1955 S. Kitamura).

The corolla is at first purple, afterward yellowish white.

Distr. Afghanistan.

Macrotomia euchromon (Royle) Pauls. in Bot. Tidskrift XXVII: 216 (1906).—Popov in Fl. URSS XIX: 169 (1953).

Lithospermum euchromon Royle, Ill. Bot. Himal. 305 (1839).—Johnston in Journ. Arnold Arb. XXXIII: 333 (1952).

Macrotomia perennis (Schrenk) Boiss., F. O. IV: 212.—Clarke, F. B. I. IV: 177.

Macrotomia cyanochroma Boiss., l. c. (1879).

Nuristan: Shabul Gul (Aug. 6, 1955 S. K.).

Distr. Tianshan, Pamir, Iran, Afghanistan, Karakoram, Singkiang, Himalaya: from Kashmir to Kumaon.

Macrotomia inconspicua (Hemsl. et Lace) Kitamura comb. nov.

Arnebia inconspicua Hemsl. et Lace in J. L. S. XXVIII: 326 (1891).

Distr. Afghanistan, Pakistan.

Macrotomia speciosa (Aitch. et Hemsl.) Kitamura comb. nov.

Arnebia speciosa Aitch. et Hemsl., J. L. S. XVIII: 81, XIX: 179 Plate XXIV figs. 1-6 (1882).—Johnston in Journ. Arnold Arb. XXXIII: 333 (1952) in note.

Pagman near Kabul (July 15, 1955 S. K.).

Distr. Afghanistan, Pakistan (Kaiwas).

Mattiastrum asperum (Stocks) Brand in Fedde, Rep. XIV: 153 (1915), in Pflanzenreich Heft 78: 61 (1921).

Paracaryum asperum Stocks in Hook., Kew Jour. IV: 175 (1852).—Boiss., F. O. IV: 261 (1879).

Distr. Afghanistan, Pakistan.

Mattiastrum Dielsii Bornm. in Engler, Bot. Jahrb. LXVI: 236 (1934).

Between Sarobi and Kabul (June 18, 1955 S. K.), Lataband, Mullaomur (June 5, 1955 S. K.).

Distr. Afghanistan.

Stem with appressed and patent hairs. Radical leaves to 9 cm long 19 mm broad apex obtuse or acute.

Rindera oblongifolia M. Pop. in Not. Syst. Kom. XIII: 224 (1950) from Tianshan is closely related to this species.

Mertensia echinoides Benth. ex Clarke, F. B. I. IV: 170 (1883).

Mertensia echinoides Hooker fil. & Thom.? Aitch., J. L. S. XIX: 178.

Lithospermum echinoides Benth. in Royle, Ill. 305 (1863).

L. secundiflorum Decne. in Jacquemont, Voy. Bot. t. 120, t. 125 (1844).

Distr. Pakistan, Kashmir.

Aitchison reported *M. echinoides*? from Shend-toi Valley of Kuram.

Moltkia parviflora Clarke, F. B. I. IV: 171 (1883).

Craniospermum parviflorum Decne. in Jacquemont, Voy. Bot. 126, t. 130 (1844).—Aitch., J. L. S. XVIII: 80.

Distr. Afghanistan (Clarke), Pakistan: Kashmir, Kuram.

Myosotis micrantha Pall. ex Lehm. in Neue Denkschr. d. Naturf. Ges. Halle, III, II: 24 (1817).—Hegi, Ill. Fl. V₃: 2172, Fig. 3129 (1927).—Popov in Fl. URSS XIX: 383 (1953).

Myosotis stricta Link in Roem. et Schult., Syst. IV: 104 (1819).—Boiss., F. O. IV: 239 (1879).—Aitch., T. L. S. n. III: 90.—Clarke, F. B. I. IV: 174.

Distr. Europe, North Africa, Western Asia to Altai, Asia Minor, Afghanistan, Pakistan, Kashmir.

Myosotis palustris Lamk., Fl. Fr. II: 283 (1778).—Reichenbach, Ic. XVIII: t. 119.—Boiss., F. O. IV: 234.—Popov in Fl. URSS XIX: 363 (1953).

Pagman near Kabul (July 15, 1955 S. K.).

Distr. Europe, Caucasus, Siberia, Asia Minor, Afghanistan.

Myosotis sylvatica Hoffm., Deutsch. Fl. od. Bot. Taschenb. I: 61 (1791).—

Boiss., F. O. IV : 237.—Reich., Ic. Fl. Germ. XVIII : t. 121.—Aitch., J. L. S. XVIII : 178.—Clarke, F. B. I. IV : 173.—Popov in Fl. URSS XIX : 373 (1953).

Nuristan : Shabul Gul (Aug. 6, 1955 S. K.).

Distr. Eurasia from England to Japan, North Africa, Iran, Afghanistan, Himalaya : from Kashmir to Kumaon.

Nonnea caspica (Willd.) G. Don, Syst. IV : 336 (1838).—Popov in Fl. URSS XIX : 334 (1954).

Onosma caspica Willd., Sp. Pl. I : 775 (1797).

Nonnea picta Fischer et Mey., Ind. Sem. Horti Petrop. 43 (1835).—Boiss., F. O. IV : 166 (1879).—Aitch., T. L. S. n. III : 90.—Bornm. in Engler, Bot. Jahrb. LXVI : 234 (1934).

Distr. Eastern Europe : Astrakhan (Lower Volga), Caucasus, Asia Minor, Iran, Afghanistan, Pakistan, Turkestan.

Nonnea pulla (L.) DC., Fl. Fr. 3 ed. 626 (1805).—Reich., Ic. Fl. Germ. XVIII : 101.—Boiss., F. O. IV : 166.—Clarke, F. B. I. IV : 169.—Popov in Fl. URSS XIX : 337 (1954).

Kandahar (June 8, 1955 S. K.).

Distr. From Middle Germany to Poland, Southern Russia, Asia Minor, Iran, Afghanistan, Pakistan.

Aitchison reported *Nonnea nigricans* DC. of Western Mediterranean Region from Kuram Valley in J. L. S. XVIII : 81 (1880).

Onosma afghanicum Bornm. in Engler, Bot. Jahrb. XXXIII : 234 (1934).

Kabul, Koh-i-Asmai (April 2, 1952 O. Suzuka).

Distr. Afghanistan.

Onosma dichroanthum Boiss., Diag. Pl. Or. Ser. I, II : 107 (1849).—Popov in Fl. URSS XIX : 210 (1954).

Onosma setosum β. *dichroanthum* Boiss., F. O. IV : 181.

Distr. Caucasus, Turkestan, Pamir, Tianshan, Iran, Afghanistan.

Onosma echinoides L. was reported by Clarke in F. B. I. IV : 178 from Kabul and by Aitchison in T. L. S. n. III : 90 (1888) from Badghis and Khorasan.

Onosma Griffithii Vatke in Zeitsch. Naturw. XLV : 127 (1875) was reported by Bornm. in Beih. Bot. Central. XXXIII, II : 176 (1915) from Afghanistan, on Griffith n. 5963, 5966. But Bornmüller did not see the specimens. Griffith n. 5963 and 5966 were identified by Brand as *Lappula Redowskii*.

Onosma stenosphon Boiss., Diag. Ser. I, VII : 35 (1846), F. O. IV : 183.—Aitch., J. L. S. XIX : 179.

Distr. Iran, Afghanistan, Pakistan.

Onosma (§ *Haplotricha*) **Yamagatae** Kitamura in Acta Phytotax. Geobot. XVI : 134 (1956). **Fig. 86.**

Perennis, collo lignoso fusco-corticato. Caulis pluris florifer vel sterilis, florifer

ascendens 20–22 cm altus simplex 2 mm diametro apice ad inflorescentiam bifidus, pilis minutis et longis albis patentibus dense hispidus. Caulis sterilis abbreviatus apice foliis pluribus praeditus. Folia caulis sterilis lineari-lanceolata 17–19 cm longa 8–10 mm lata apice obtusa basi attenuata subtus distincte uninervata utrinque minute setulosa et setis albis 2–4 mm longis basi tuberculatis (tuberculis glabris) dense hispida, folia caulis florifri linearia 2.5–3.5 cm longa 4–5 mm lata apice obtusa basi sessilia utrinque dense hispida. Inflorescentia cymosa bifida capitato-congesta 3 cm longa 4–5 cm lata (cum floribus), bracteis lanceolatis 1.5–1.7 cm longis apice angustatis basi rotundatis utrinque pilis flavescentibus dense hispidis. Flores circ. 6, pedicellis 4–5 mm longis. Calycis laciniae lineari-lanceolatae apice angustatae 15 mm longae 2 mm latae, 2 inter se ad 6 mm connatae, extus dense flavo-hirsutae post anthesin vix auctae. Corolla tubuloso-campanulata 28 mm longa apice 10 mm lata minute papillosa, lobis depresso-deltoides apice obtusis. Antherae 11 mm longae apice ad apicem corollae attingentes vix exsertae. Nectarium glabrum. Stylus 29 mm longus.

Nuristan, Shabul Gul, in rocky place 3400 m (Aug. 6, 1955 S. Kitamura)—Typus in Herb. Univ. Kyoto.

Species *O. afghanicae* affinis a qua foliis radicalibus longioribus, foliis caulinis brevioribus angustioribus, corollis longioribus divergit.

The specific name of this species is dedicated to Mr. K. Yamagata, who was the ambassador to Pakistan who rendered the warmest encouragement and good offices for our scientific expedition.

Distr. Afghanistan.

Paracaryum inconspicuum Brand in Fedde, Rep. XIII: 549 (1915), in Pflanzenreich Heft 78: 46 (1921).

Distr. Afghanistan, Iran.

Paracaryum intermedium (Decne.) Lipsky in Acta Horti Petrop. XXVII, II: 487 (1910).—Brand, l. c. 78: 47 (1921).—Popov in Fl. URSS XIX: 602 (1954).

Paracaryum micranthum Boiss., Diag. Ser. I, XI: 129 (1849), F. O. IV: 255 (1879).

Distr. Turkestan, Pamir, Afghanistan, Pakistan, Iran, Iraq, Egypt, Arabia.

Paracaryum microcarpum Boiss., Diag. Ser. II, III: 139 (1856), F. O. IV: 255.—Clarke, F. B. I. IV: 162 (1883).—Brand in Pflanzenreich 78: 46 (1926).

Omphalodes microcarpus Boiss. ex Aitchison, J. L. S. XIX: 178 (1882).

Distr. Afghanistan, Pakistan: Kashmir.

Paracaryum rugulosum (DC.) Boiss., Diag. Pl. Orient. Ser. I, XI: 129 (1849), F. O. IV: 276 (1879).—Aitch., T. L. S. n. III: 89.—Brand in Pflanzenreich Heft 78: 49, fig. 5 (1921).

Distr. From Egypt, Sinai Peninsl., Arabia, Iran, Transcaucasia, Iran, Afghanistan Pakistan.

Rochelia cardiosepala Bunge in Mém. Acad. Sc. Pétersb. Sav. Etr. VII: 420

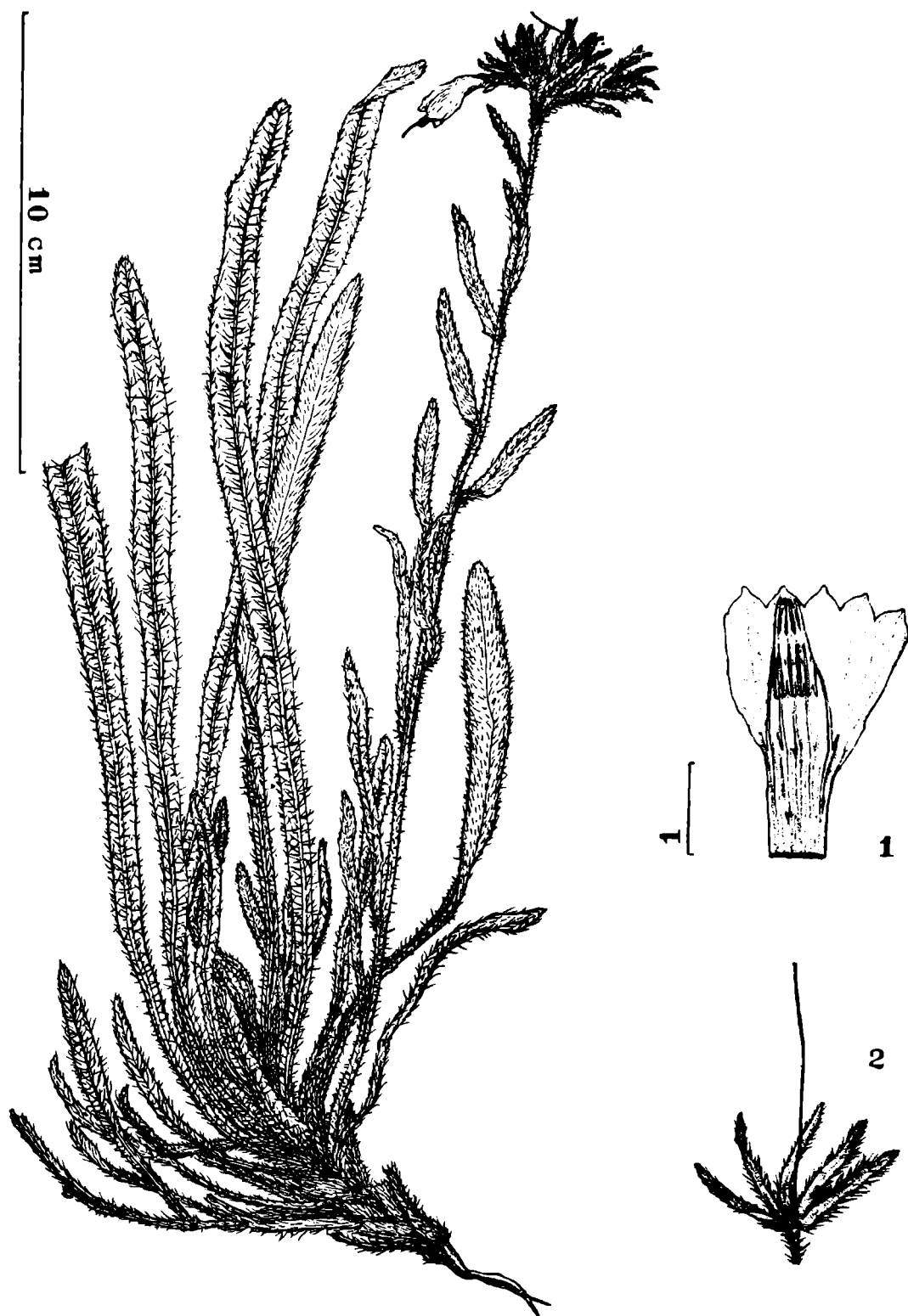


Fig. 86. *Onosma Yamagatae* Kitam.: 1 Corolla and Anthers, 2 Pistil and Calyx. (Nuristan: Shabul Gul).

(1851).—Boiss., F. O. IV: 246.—Clarke, F. B. I. IV: 166.—Popov in Fl. URSS XIX: 563, Tab. XXVII—1 (1954).

Pagman near Kabul (July 15, 1955 S. K.).

Distr. Caucasus, Iran, Turkestan, Afghanistan, Pamir, Kashmir.

Rochelia macrocalyx Bunge in Mém. Acad. Sc. Pétersb. Sav. Étr. VII: 419 (1851).—Boiss., F. O. IV: 246.—Popov in Fl. URSS XIX: 526, Tab. XXVII—3 (1954).

Rochelia rectipes Stocks in Hooker, Journ. Bot. IV: 176 (1851).—Clarke, F. B. I. IV: 166.

Distr. Iran, Afghanistan, Turkestan, Pamir, Zanskar, Pakistan.

Rochelia stellulata Reich. was reported from Afghanistan by Boissier, F. O. IV: 244 (1879) and by Clarke in F. B. I. IV: 166 (1883). Their *R. stellulata* includes both *R. disperma* (Lb.) C. Koch and *R. retorta* (Pall.) Lipsky.

Rochelia stylaris Boiss., F. O. IV: 245.—Aitch., J. L. S. XIX: 178, T. L. S. n. III: 89.—Clarke, F. B. I. IV: 166.

Distr. Afghanistan, Pakistan: Quetta (May 2, 1952 O. Suzuka).

Solenanthus circinatus Ledeb., Fl. Alt. I: 194 (1829), Ic. Fl. Ross. t. 26 (1828).—Boiss., F. O. IV: 270.—Clarke, F. B. I. IV: 160.—Aitch., T. L. S. n. III: 88.—Brand in Pflanzenreich Heft 78: 157 (1921).—Popov Fl. URSS XIX: 642 (1952).

Solenanthus petiolaris DC., Prodr. X: 164 (1846).—Boiss., F. O. IV: 270.—Brand in Pflanzenreich Heft 78: 158 (1921).

Distr. Caucasus, Armenia, Syria, Iran, Turkestan, Irtysh, Altai, Sungaria, Tianshan, Pamir, Afghanistan, Himalaya: Kashmir.

Solenanthus strictissimus Brand in Fedde, Rep. XIII: 546 (1915).

Distr. Afghanistan.

Trichodesma incanum DC., Prodr. X: 174 (1846).—Boiss., F. O. IV: 282 (1875).—Bornm. in Engler, Bot. Jahrb. LXVI: 237 (1934).—Brand. in Pflanzenreich Heft 78: 36 (1921).—Popov in Fl. URSS XIX: 690 (1954).

Pulikhumri (July 2, 1955 S. K.).

Distr. Iran, Afghanistan, Turkestan.

Stem with appressed hairs.

var. **strictum** (Aitchison et Hemsl.) Brand in Pflanzenreich 78: 37 (1921).

T. strictum Aitchison et Hemsl. in Journ. Linn. Soc. XIX: 178 (1882).

Lataband, Mullaomur (June 15, 1955 S. K.).

Distr. Afghanistan.

Var. *strictum* differs from var. *incanum* by the stem with patent hairs.

Trichodesma indicum (L.) R. Br., Prodr. Fl. Nov. Holland. 496 (1810).—Boiss., F. O. IV: 280.—Clarke, F. B. I. IV: 153.—Brand in Pflanzenreich Heft 78: 38 (1921).

Distr. Afghanistan, Pakistan, India.

Trichodesma molle DC., Prodr. X: 174 (1846).—Boiss., F. O. IV: 281 (1879).

T. incanum subsp. *molle* Brand, l. c. (1921).

Distr. Iran, Afghanistan.

var. **Griffithii** (Brand) Kitamura stat. nov.

T. incanum subsp. *molle* var. *Griffithii* (Planch.) Brand, l. c. 37 (1921) et f. *Aitchisoni* Brand, l. c. 38.

T. molle Aitch., T. L. S. n. III: 88.

Between Siyagird and Charikar (July 11, 1955 S. K.).

Distr. Afghanistan.

Stem erect or procumbent glabrous. Leaves ovate 4–6 cm long 2–3.5 cm broad base broadly amplexicaul, with hairs springing from tubercles, not incanotomentose.

Verbenaceae

Lippia nodiflora (L.) L. C. Rich. ex Michaux, Fl. Bor. Amer. II: 15 (1803).—Boiss., F. O. IV: 532.—Aitch., J. L. S. XIX: 182.—Clarke, F. B. I. IV: 563.—Gorsh. in Fl. URSS XIX: 697 (1953).

Verbena nodiflora L., Sp. Pl: 20 (1753).

Phyla nodiflora (L.) Green in Pittonia IV: 46 (1899).

Sarobi (June 16, 1955 S. K.).

Distr. Pantropic, Afghanistan, Gorn.-Turkm.

Verbena officinalis L., Sp. Pl. 29 (1753).—Boiss., F. O. IV: 534 (1879).—Aitch., J. L. S. XVIII: 85.—Clarke, F. B. I. IV: 565.—Gorsh. in Fl. URSS XIX: 694 (1953).

Sarobi (June 16, 1955 S. K.), Kandahar (June 6, 1955 S. K.), Ghunoy near Sarobi (June 15, 1955 S. K.).

Distr. Eurasia, North Africa, naturalized in America.

Vitex Agnus-castus L., Sp. Pl. 638 (1753).—Aitch., T. L. S. n. III: 95 (1888).—Rehder, Manual 2 ed. 805 (1940).—Gorsh. in Fl. URSS XIX: 698 (1953).

Between Doab and Pulikhumri along Bamian River, wild (June 26, 1955 S. K.).

Distr. Mediterranean Region to Afghanistan, Turkestan to Syr-Dar. and Pamiro-Al.

Vitex Negundo L., Sp. Pl. 638 (1753).—Aitch., J. L. S. XIX: 182.—Boiss., F. O. IV: 535.—Clarke, F. B. I. IV: 583.—Rehder, Manual 2 ed. 805 (1940).

Distr. From Afghanistan through India to China, Philippines.

V. *Negundo* is a vicariant of V. *Agnus-castus*.

Labiatae by Gen Murata

Ajuga bracteosa Wall. ex Benth. in Wall., Pl. As. Rar. I: 59 (1830).—DC., Prodr. XII: 598 (1848).—Boiss., F. O. IV: 799.—Mukerjii in Rec. Bot. Surv. Ind. XIV: 224 (1940).—Rech. f., Sym. Afgh. I: 13 (1954).

A. remota Benth., l. c. (1830).

Nuristan: Chatrass (Aug. 2, 1955 S. Kitamura), between Voma and Chatrass (Aug. 1, 1955, S. K.), between Seprigal and Voma (Jul. 29, 1955 S. K.).

Distr. Abyssinia, Afghanistan, Himalaya, Tibet, China, Formosa, Ryukiu.

Ajuga chamaecistus Ging. var. **euphrasioides** Boiss., F. O. IV: 801 (1879).—Parsa, Fl. Iran IV: 863 (1950).

A. euphrasioides Boiss., Diagn. Ser. I, VII: 63 (1846).

Distr. Iran, Afghanistan.

Ajuga parviflora Benth. in Wall., Pl. As. Rar. I: 59 (1830) et l. c. (1848).—Aitch., J. L. S. XVIII: 88.—Rech. f., l. c. 13 (1954).

Distr. Afghanistan, Himalaya: Kashmir to Kumaon.

Calamintha debilis (Bunge) Benth. in DC., Prodr. XII: 232 (1848).—Aitch., l. c. 86 (1881).—Boriss. in Fl. URSS XXI: 432 (1954).

Thymus debilis Bunge in Ledeb., Fl. Alt. II: 391 (1830) et Icon. Pl. Fl. Ross. V: Tab. 438 (1834).

Distr. Altai, Central Asia, Afghanistan, Caucasus.

Clinopodium repens (Don) Benth. in Wall., Pl. As. Rar. I: 66 (1830) excl. var. β .

Calamintha repens (Don) Benth. in DC., Prodr. XII: 233 (1848).—Rech. f., l. c. 74 (1954).

Distr. Afghanistan, Himalayas.

Clinopodium umbrosum (M. B.) C. Koch in Linnaea XXI: 673 (1848).—Kuntze, Rev. Gen. II: 516 (1891).—Kitam. et Murata in Fauna & Flora Nepal Himal. 209 (1955).—Boriss. in Fl. URSS XXI: 439 (1954).

Calamintha umbrosa Fisch. et Mey., Ind. Sem. VI: 6 (1840).—Boiss., F. O. IV: 578 (1879).—Mukerjii in Rec. Bot. Surv. Ind. XIV: 98 (1940).—Rech. f., l. c. 74 (1954).

Nuristan: Between Seprigal and Voma (Jul. 29, 1955 S. K.).

Distr. Assam, Burma, Himalayas, Afghanistan, Iran, Caucasus.

Clinopodium vulgare L., Sp. Pl. 587 (1753).—Boriss. in Fl. URSS XXI: 437 (1954).

Melissa Clinopodium Benth., Lab. Gen. et Sp. 392 (1834).

Calamintha Clinopodium Benth. in DC., Prodr. XII: 233 (1848).—Aitch., J. L. S. XVIII: 86.—Mukerjii, l. c. 98 (1940).

Cal. vulgaris Druce in Ann. Scot. Nat. Hist. 224 (1906).

Nuristan: Between Voma and Trokikorl (Jul. 31, 1955 S. K.).

Distr. Europe, N. Africa, W. & N. Asia, Iran, Afghanistan, Himalayas.

Dracocephalum Aitchisonii Rech. f., Symb. Afgh. I: 42, fig. 24 (1954).

Distr. Afghanistan (Kuram Valley).

Dracocephalum nuristanicum Rech. f. et Edelberg ex Rech. f., Symb. Afgh. I:

43, fig. 25 (1954).

Distr. Afghanistan (Nuristan).

Eremostachys acanthocalyx Boiss., Diagn. Ser. II, IV: 49 (1859), F. O. IV: 795.—Aitch., J. L. S. XIX: 184.—Mukerjii, l. c. 200 (1940).—Parsa, Fl. Iran IV: 851 (1949).

Distr. Afghanistan, Pakistan, Panjab.

Eremostachys acaulis Beck ex Rech. f. in Fedde, Repert. XLVIII: 161, Tab. 103, fig. 2 (1940), Symb. Afgh. I: 44 (1954).

Distr. Afghanistan.

Eremostachys bamianica Rech. f., Symb. Afgh. I: 45, fig. 26 and 27 a (1954).

Distr. Afghanistan (Bamian Valley).

Eremostachys cabulica Beck ex Rech. f. in Fedde, Repert. XLVIII: 161, Tab. 103, fig. 1 (1940), l. c. 46 (1954).

Distr. Afghanistan.

Eremostachys Dielsii Bornm. in Engl., Bot. Jahrb. LXVI: 240 (1933).

Distr. Afghanistan.

Eremostachys Edelbergii Rech. f., Symb. Afgh. I: 46, fig. 28 (1954).

Nuristan: Shabul Gul (Aug. 6, 1955 S. K.).

Distr. Afghanistan (Nuristan).

Eremostachys gymnoclada Rech. f. et Kōie ex Rech. f., Symb. Afgh. I: 48, fig. 27 c (1954).

Distr. Afghanistan.

Eremostachys labiosa Bunge in Mém. Acad. Sc. Pétersb. sér. VII, XXI: 679 (1873).—Regel in Acta Hort. Petrop. IX: 534 (1886).—Knorr. in Fl. URSS XXI: 39 (1954).—Rech. f., l. c. 46 (1954).

Distr. Afghanistan, Turkestan.

var. **canescens** Regel in Acta Horti Petrop. VI: 382 (1879), IX: 535 (1886).—Aitch, T. L. S. n. III: 98.—Mukerjii, l. c. 200 (1940).

E. napuligera Franch. in Ann. Sc. Nat. Sér. VI, XVIII: 237, t. 17 (1884).—Parsa, Fl. Iran IV: 849 (1949).

Distr. Pakistan, Afghanistan, Turkestan.

Eremostachys laciniata (L.) Bunge var. **brevicaulis** Regel in Acta Horti Petrop. IX: 556 (1884).

E. speciosa sensu Aitch., J. L. S. XVIII: 89.

Distr. Afghanistan, Turkestan.

Eremostachys loasaefolia Benth. in DC., Prodr. XII: 547 (1848).—Boiss., F. O. IV: 795 (1879).—Mukerjii, l. c. 199 (1940).—Parsa, Fl. Iran IV: 851 (1949).

E. Stocksii Boiss., Diagn. Ser. II, IV: 48 (1859).

Distr. Afghanistan, Pakistan.

Eremostachys persimilis Aitch. et Hemsl., T. L. S. n. III: 98.—Parsa, Fl.

Iran IV : 851 (1949).

Distr. Afghanistan, Iran.

Eremostachys Regeliana Aitch. et Hemsl., T. L. S. n. III : 99.—Knorr. in Fl. URSS XXI : 47 (1954).—Rech. f., l. c. 49 (1954).

Distr. Afghanistan, Turkoman.

Eremostachys sanglechensis Rech. f., Symb. Afgh. I : 49, fig. 29 & 27-d (1954).

Distr. Afghanistan.

Eremostachys thyrsiflora Benth. in DC., Prodr. XII : 248 (1848).—Boiss., F. O. IV : 797.—Regel in Acta Horti Petrop. IX : 567, t. 9, fig. 4, 5.—Mukerjii, l. c. 201 (1940).

Distr. Afghanistan, Pakistan, Panjab.

Eremostachys vacillans Rech. f., Symb. Afgh. I : 50, fig. 30 & 27 e-f (1954).

Distr. Afghanistan (Nuristan).

Eremostachys vulnerans Rech. f., Symb. Afgh. I : 52, fig. 31 (1954).

Pagman near Kabul (July 15, 1955 S. K.).

Distr. Afghanistan.

Eriophyton afghanicum Rech. f., l. c. 58, fig. 34 (1954).

Distr. Afghanistan.

Hymenocrater argutidens Rech. f. in Fedde, Repert. XLVIII : 160, Tab. 104, fig. 1 (1940), l. c. 44 (1954).

Distr. Afghanistan.

Hymenocrater elegans Bunge, Lab. Pers. 63 (1873).—Boiss., F. O. IV : 678 (1879).—Rech. f., l. c. 44 (1954).

H. bituminosus var. *elegans* (Bunge) O. Kuntze in Acta Horti Petrop. X : 228 (1887).—Parsa, Fl. Iran IV : 722 (1949).

Distr. Afghanistan, Iran.

Hymenocrater sessilifolius Benth. in DC., Prodr. XII : 406 (1848).—Boiss., F. O. IV : 678 (1879).—Rech. f., l. c. 44 (1954).

Distr. Afghanistan, Pakistan.

Hyssopus seravschanicus (Dub.) Pazil in Ind. Sem. Hort. Bot. Univ. As. Med. 4 (1945).—Boriss. in Fl. URSS XXI : 458, Tab. XXV-1 (1954).

Distr. Pam.-Al., Afghanistan.

Isodon plectranthoides Schrad. ex Kudo, Lab. Sino-Jap. 120 (1929).—Kitam. et Murata, l. c. 212 (1955).

Plectranthus rugosus Wall., Pl. As. Rar. II : 17 (1831).—Aitch., J. L. S. XVIII : 85 (1881).—Mukerjii, l. c. 47 (1940).

Nuristan : Between Seprigal and Voma (July 29, 1955 S. K.).

Distr. Afghanistan, Pakistan, Kashmir, Himalayas, Bhutan, China (Szechuan).

Lagochilus cabulicus Benth. in DC., Prodr. XII : 515 (1848).—Boiss., F. O. IV :

769.—Mukerjii, l. c. 159 (1940).—Parsa, l. c. 823 (1949).—Rech. f., l. c. 58 (1954).—Knorr. in Fl. URSS XXI: 175 (1954).

Distr. Afghanistan, Iran, Turkestan, Kashmir : Gilgit.

Lagochilus nuristanicus Rech. f. et Ederb. ex Rech. f., Sym. Afg. I: 58, fig. 35 & 37 c (1954).

Distr. Afghanistan (Nuristan).

Lallemantia Royleana (Wall.) Benth. in DC., Prodr. XII: 404 (1848).—Boiss., F. O. IV: 674 (1879).—Aitch., J. L. S. XVIII: 87.—Parsa, l. c. 716, fig. 356 (1949).—Rech. f., l. c. 44 (1954).

Dracocephalum Royleanum Wall. ex Benth. in Wall., Pl. As. Rar. I: 65 (1830).

Distr. Afghanistan, Pakistan, Iran, Turkestan, Punjab, Kumaon.

Lamium album L., Sp. Pl. 579 (1753).—Boiss., F. O. IV: 763 (1879).—Mukerjii, l. c. 161 (1940).—Rech. f., l. c. 58 (1954).—Grossh. in Fl. URSS XXI: 134 (1954).

Distr. Europe, North Africa, North & West Asia, Iran, Afghanistan, Central Asia, Himalayas.

Lamium amplexicaule L., Sp. Pl. 579 (1753).—Aitch., J. L. S. XVIII: 88.—Boiss., F. O. IV: 760.—Rech. f., l. c. 58 (1954).

Distr. Asia, Europe, North Africa.

Lamium rhomboideum (Benth.) Benth., Lab. Gen. et Sp. 509 (1834).—Aitch., l. c. 88.—Bornm. in Engl., Bot. Jahrb. LXVI: 240 (1933).

Erianthera rhomboidea Benth. in Hook., Bot. Misc. III: 380 (1833).

Distr. Kashmir, Afghanistan, Turkestan, Tibet.

Leonurus cardiaca L., Sp. Pl. 584 (1753).—Boiss., l. c. 753.—Aitch., l. c. 88.—Mukerjii, l. c. 192 (1940).—Rech. f., l. c. 58 (1954).—Kuprian. in Fl. URSS XXI: 650 (1954).

Distr. Europe, West & North Asia, Iran, Afghanistan, Himalayas.

Leonurus nuristanicus Murata in Acta Phytotax. Geobot. XVII: 73 (1958).
Fig. 87.

Affinis *L. cardiaco*, a quo differt omnibus partibus adpresse et minute tomentellis, foliis 5-fidis, floralibus ovatis 3-5-fidis, lobis apice obtusis.

Caulis erectus, 50-80 cm altus, tetragonus, minute et adpresse tomentellus, internodiis inferioribus et mediis 6-8 cm longis. Folia inferiora ignota; media petiolata, petiolis 1.5-3 cm longis, laminis ambitu rhomboideo-ovatis 3-5 cm longis 2.5-4.5 cm latis, utrinque adpresse tomentellis subtus glanduloso-punctatis, palmatim 5-fidis, segmentis 1-5 crenato-lobatis, lobis apice obtusis, nervis subtus prominentibus; floralia sensim diminuta 3-5 palmatifida. Flores sessiles, in verticillastris multifloris ad apicem caulium remote dispositi. Bractae subulatae tomentellae apice spinescentes, calyce paulo breviores. Calyx 6-7 mm longus, minute et adpresse tomentellus, dentibus triangularibus spinescentibus tubo 3-plo brevioribus, antice 2 recurvatis. Corolla calyce circiter duplo longiora, extus pilosa, tubo ca. 6 mm longo intus annulato, labio

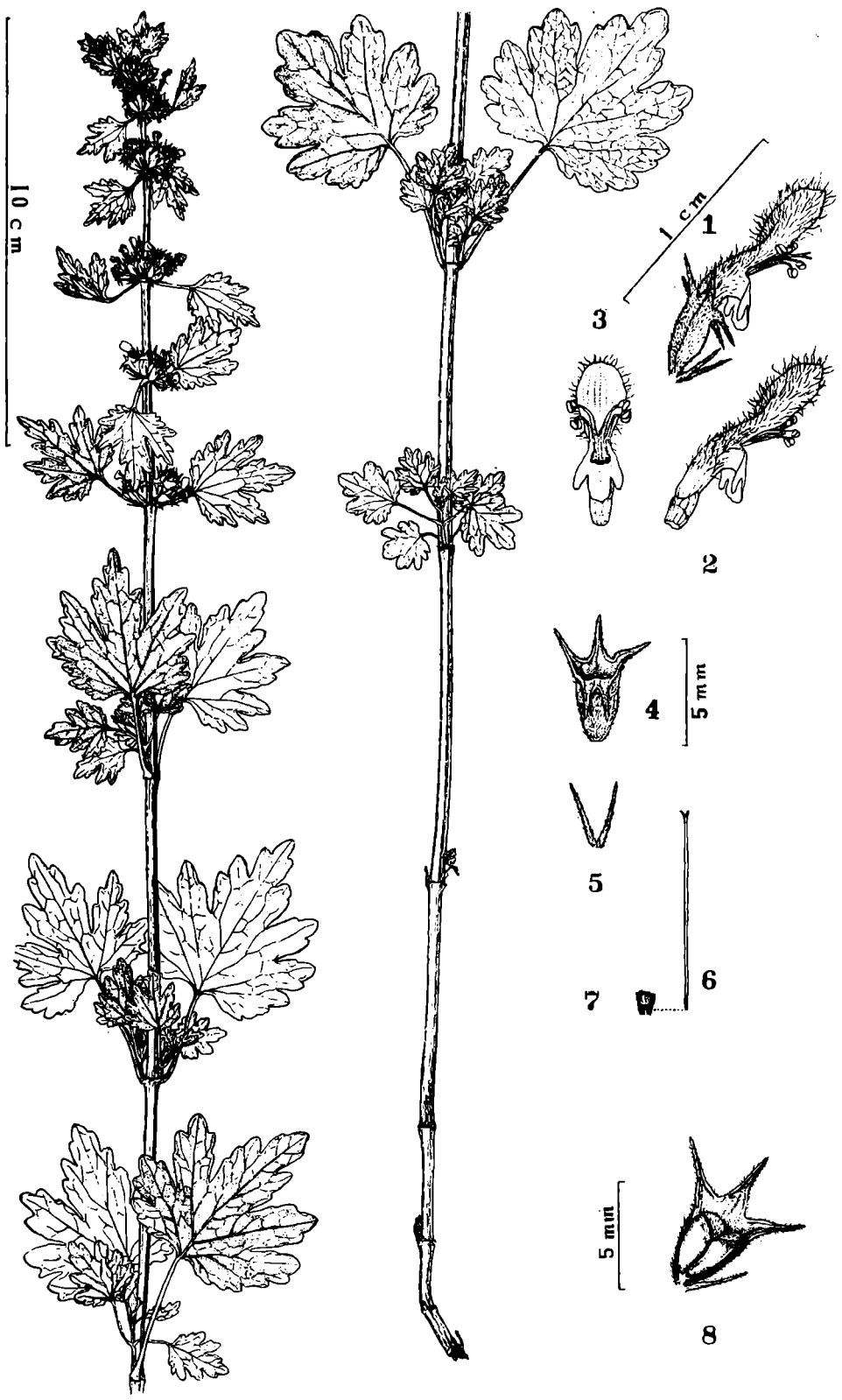


Fig. 87. *Leonurus nuristanicus* Murata: 1 Flower, 2 and 3 Corolla, 4 Calyx, 5 Bract, 6 Style, 7 Ovary, 8 Nutlets. (Nuristan: Between Kushimaicot and Pushuki).

superiore suberecto 3 mm lato, extus villosus, inferiore ei aequilongo trilobato, lobis medio obovato glabro. Stamina 4, subaequalia exserta. Nuculae ignotae.

Nuristan: Between Kushimaicot and Pushuki (Aug. 3, 1955 S. K.) —Typus in Herb. Univ. Kyoto.

Distr. Afghanistan.

Lycopus europaeus L., Sp. Pl. 21 (1753).—Benth. in DC., Prodr. XII: 178 (1848).—Boiss., l. c. 545 (1879).—Bornm., l. c. 237 (1934).—Mukerjii, l. c. 102 (1940).—Bolk. in Fl. URSS XXI: 395 (1954).

Pulikhumri (Jul. 3, 1955, S. K.).

Distr. Europe, West & Central Asia, Siberia, Kashmir, Afghanistan, North Africa.

Marrubium alternidens Rech. f. in Österr. Bot. Zeitschr. XCIX: 37 (1952), l. c. 26 (1954).—Knorr. in Fl. URSS XX: 236 (1954).

M. vulgare var. *oligodon* Rech. f. ap. Köie in Dan. Scient. Invest. in Iran IV: 44 (1945).

Distr. Caucasus, Anatoria, Turkoman, Iran, Afghanistan, Kashmir.

Marrubium procerum Bunge, Lab. Pers. 66 (1873).—Boiss., F. O. IV: 700. —Parsa, Fl. Iran IV: 756 (1949).—Rech. f., l. c. 26 (1954).

Distr. Iran, Afghanistan.

Marrubium vulgare L., Sp. Pl. 583 (1753).—Benth. in DC., Prodr. XII: 453 (1848).—Boiss., l. c. 703 (1879).—Aitch., l. c. 88 (1881).—Hook. f., F. B. I. IV: 671.

M. propinquum Benth. in DC., Prodr. XII: 153 (1848).

Shishigar (Jul. 11, 1955 S. K.), between Sarobi and Kabul (June 18, 1955 S. K.).

Distr. Kashmir, Afghanistan, Pakistan, westward to Europe and North Africa. Introduced to America.

Mentha (Spicatae) **afghanica** Murata in Acta Phytotax. Geobot. XVII: 73 (1958). Fig. 88.

Mentha longifolia var. *incanae* affinis sed floribus minoribus ca. 2 mm longis, calycibus ca. 1.5 mm longis dentibus brevibus triangularibus obtusis distinguenda.

Perennis. Caulis 40–60 cm altus, erectus, subsimplex vel ramosus, quadrangulus, minutissime appresse velutino-tomentellus cinerascens, internodiis 2–3 cm longis. Folia breviter (2–5 mm) petiolata, lanceolata vel oblongo-lanceolata, 15–35 mm longa, 3–7 mm lata, adpresse incano-tomentella, apice acuta, margine remote serrata, basi cuneata, floralia valde diminuta lanceolata integra bracteiformia. Inflorescentia longe spicata 12–23 cm longa, simplex vel basi ramis brevibus divaricatis praedita, verticillastris 20–30, 2–17 mm distantibus multifloris; flores 2–2.1 mm longi, pedicellis ca. 1 mm longis. Calyx ca. 1.5 mm longus tubuloso-campanulatus incano-tomentellus 5 dentatus, dentibus brevibus triangularibus obtusis. Corolla pallide lilacina, campanulata, subaequaliter 4-fida, extus pilosa et glanduloso-punctata, lobis superioribus submajoribus bifidis. Stamina 4, longe exserta. Stylus longe exsertus, apice 2-fidus. Nuculae ellipticae,

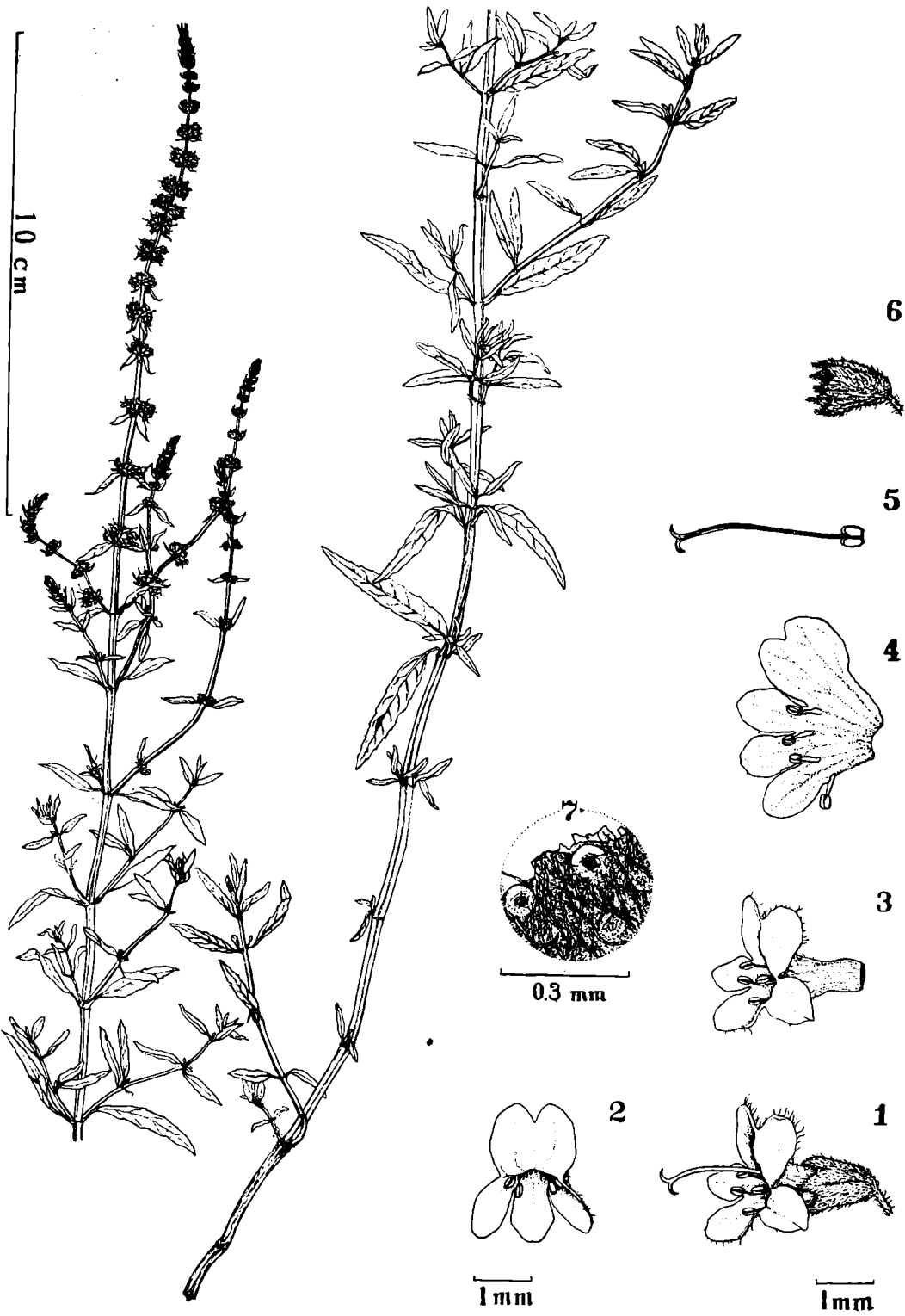


Fig. 88. *Mentha afghanica* Murata: 1 Flower, 2, 3 and 4 Corolla, 5 Pistil, 6 Calyx, 7 Oil Sac of Leaf. (Near Chagasarai).

brunneae, 0.5 mm longae.

Eastern Prov. near Chagasarai (Jul. 26, 1955 S. Kitamura)—Typus in Herb. Univ. Kyoto.

Distr. Afghanistan.

Mentha longifolia (L.) Huds., Fl. Angl. 221 (1762).—Parsa, Fl. Iran IV : 556 (1949).—Boriss. in Fl. URSS XXI : 611 (1954).—Rech. f., l. c. 79 (1954).

M. spicata β. *longifolia* L., Sp. Pl. 576 (1753).

M. sylvestris L., Sp. Pl. 804 (1763).—Boiss., F. O. IV : 543 (1879).—Hook. f., F. B. I. IV : 647.—Mukerjii, l. c. 86 (1940).

Taiwara (Sept. 8, 1955 T. Umesao).

Distr. Europe, Iran, Afghanistan, West and Central Asia, Himalayas, Tibet.

var. **incana** (Willd.) Dinsm. (1932).—Parsa, Fl. Iran IV : 558 (1949).

M. incana Willd., Hort. Berol. 609 (1809).—Aitch., l. c. 86 (1881).—Benth. in DC., Prodr. I : 169 (1848).

M. sylvestris var. *incana* (Willd.) Hook. f., l. c. 170 (1885).

M. sylvestris var. *petiolata* Boiss., F. O. IV : 543 p. p.

Sarobi (June 15, 1955 S. K.), Ghunoy near Sarobi (June 15, 1955 S. K.).

Distr. Iran, Afghanistan, Pakistan, Kashmir.

var. **stenostachya** (Boiss.) Parsa, Fl. Iran IV : 557 (1949).—Rech. f., l. c. 80 (1954).

M. sylvestris var. *stenostachya* Boiss., l. c. 543 (1879).

Distr. Afghanistan, Iran.

var. **Royleana** (Benth.) Rech. f., Sym. Afgh. I : 80 (1954).

M. Royleana Benth. in Wall., Pl. As. Rar. I : 29 (1830), Lab. Gen. Sp. 171 (1833), in DC., Prodr. XII : 169 (1848).

M. sylvestris var. *Royleana* (Benth.) Hook. f., l. c. 647 (1885).—Mukerjii, l. c. 86 (1940).

Zerni (Sept. 2, 1955 T. Umesao), between Haibak and Pulikhumri (Jul. 1, 1955 S. K.).

Distr. Afghanistan, Kashmir.

Micromeria biflora (Ham.) Benth., Lab. Gen. Sp. 378 (1834).—Aitch., l. c. 86 (1881).—Hook. f., l. c. 650 (1885).—Mukerjii, l. c. 96 (1940).—Kitam. et Murata, l. c. 212 (1955).

Thymus biflorus Ham., Don, Prodr. 112 (1825).—Benth. in Wall., Pl. As. Rar. I : 31 (1830).

Eastern Prov.: Kandai (Jul. 27, 1955 S. K.), between Kandai and Seprigal (July 28, 1955 S. K.).

Distr. Abyssinia, Arabia, Afghanistan, Pakistan, Himalayas, Nilgiris, China (Yunnan).

Micromeria subulifolia Rech. f., Symb. Afgh. I : 74, fig. 45 & 43, f (1954).

Distr. Afghanistan.

Nepeta brachyantha Rech. f. et Ederberg ex Rech. f., Symb. Afgh. I: 26, fig. 11 (1954).

Distr. Afghanistan (Nuristan).

Nepeta bracteata Benth. in DC., Prodr. XII: 395 (1848).—Boiss., l. c. 667 (1879).—Mukerjii, l. c. 125 (1940).—Pojark. in Fl. URSS XX: 422, t. 25, fig. 2 (1954).

Zataria humilis Benth. in DC., Prodr. XII: 183 (1848).

Distr. Afghanistan, Pakistan, Iran, Central Asia.

Nepeta cabulica Rech. f. in Ann. Nat. Mus. Wien LI: 421 (1941), l. c. 28, fig. 12 (1954).

Distr. Afghanistan.

Nepeta calaminthoides Benth. in DC., Prodr. XII: 382 (1848).—Aitch., l. c. 87 (1881).

Distr. Afghanistan.

Nepeta Cataria L., Sp. Pl. 570 (1753).—Benth., Lab. Gen. et Sp. 477 (1834).—Boiss., F. O. IV: 643 (1879).—Hook. f., F. B. I. IV: 662 (1885).—Kudo, Lab. Sino-Jap. 228 (1929).—Hand.-Mzt., Symb. Sin. Anth. IV: 917 (1936).—Mukerjii, l. c. 132 (1940).—Rech. f., l. c. 28 (1954).—Pojark. in Fl. URSS XX: 349 (1954).

Afghanistan: Doab (June 24, 1955 S. K.), Shibar Pass (Jul. 11, 1955 S. K.).

Distr. West Himalaya, Afghanistan to Europe, Central Asia, China: Yunnan, Szechuan.

Nepeta ciliaris Benth. in Wall., Pl. As. Rar. I: 64 (1830), Lab. Gen. Sp. 473 (1834), in DC., Prodr. XII: 379 (1848).—Hook. f., F. B. I. IV: 661.—Mukerjii, l. c. 131 (1940).—Rech. f., l. c. 28 (1954).

Distr. Kashmir, Panjab, Garwal, Afghanistan.

Nepeta cinereo-violacea Rech. f. et Kōie ex Rech. f., Symb. Afgh. I: 27, fig. 13 (1954).

Distr. Afghanistan.

Nepeta Clarkei Hook. f., F. B. I. IV: 663.—Mukerjii, l. c. 129 (1940).—Rech. f., l. c. 31 (1954).

Distr. Kashmir, Afghanistan.

Nepeta daënsensis Boiss., Diagn. Ser. I, VII: 53 (1846), F. O. IV: 667.—Parsa, l. c. 703 (1949).—Rech. f., l. c. 31 (1954).

Distr. Iran, Afghanistan.

Nepeta discolor Royle ex Benth. in Hook., Bot. Misc. III: 378 (1833).—Benth., Lab. Gen. Sp. 470 (1834), in DC., Prodr. XII: 373 (1848).—Hook. f., l. c. 659 (1885).—Aitch., l. c. 87 (1881).—Mukerjii, l. c. 87 (1940).

N. Sabinei T. A. Schmidt in Trim. Journ. Bot. VII: 238, t. 22, fig. 1-4 (1868).

Distr. Afghanistan, Kashmir, Panjab, Kumaon, Garwal.

Nepeta distans Royle ex Benth. in Hook., Bot. Misc. III: 379 (1833), 11. cc.

—Hook. f., l. c. 660 (1885).—Mukerjii, l. c. 131 (1940).—Rech. f., l. c. 31 (1954).
Distr. Kumaon, Punjab, Afghanistan.

Nepeta erecta (Royle) Benth., Lab. Gen. Sp. 482 (1834), in DC., Prodr. XII: 388 (1848).—Hook. f., l. c. 663 (1885).—Mukerjii, l. c. 129 (1940).—Rech. f., l. c. 31 (1954).

Dracocephalum erectum Royle ex Benth. in Hook., Bot. Misc. III: 380 (1833).
Distr. Kumaon, Panjab, Kashmir, Afghanistan.

Nepeta eriosphaera Rech. f. et Köie ex Rech. f., Symb. Afgh. I: 31, fig. 15 & 14, b (1954).

Distr. Afghanistan.

Nepeta floccosa Benth., Lab. Gen. Sp. 736 (1835), in DC., Prodr. XII: 380 (1848).—Boiss., F. O. IV: 641 (1879).—Hook. f., l. c. 662 (1885).—Mukerjii, l. c. 127 (1940).—Rech. f., l. c. 32 (1954).

N. rotundifolia Benth. in DC., Prodr. XII: 392 (1848).

Distr. Afghanistan, Turkestan, Kashmir, Tibet.

Nepeta juncea Benth. in DC., Prodr. XII: 379 (1848).—Boiss., F. O. IV: 651. —Parsa, l. c. 681 (1949).—Rech. f., l. c. 34 (1954).

Lataband, Mullaomur (June 15, 1955 S. K.)—Kabul, Tomb of Baber (Jul. 14, 1955 S. K.).

Distr. Iran, Afghanistan, Pakistan, Panjab.

Nepeta glutinosa Benth., Lab. Gen. Sp. 735 (1834), in DC., Prodr. XII: 377 (1848).—Hook. f., l. c. 660 (1885).—Mukerjii, l. c. 126 (1940).—Rech. f., l. c. 32 (1954).—Pojark. in Fl. URSS XX: 306, t. 19, fig. 2 (1954).

Distr. Tibet, Kashmir, Afghanistan, Central Asia.

Nepeta heterotricha Rech. f., Symb. Afgh. I: 32, fig. 16 (1954).

Distr. Afghanistan.

Nepeta Honigbergeri Rech. f. in Ann. Nat. Mus. Wien LI: 420 (1941), l. c. 34, fig. 17 (1954).

Pagman near Kabul (July 15, 1955 S. K.).

Distr. Afghanistan.

Nepeta Koelzii Rech. f., Symb. Afgh. I: 34, fig. 18 (1954).

Distr. Afghanistan.

Nepeta (Spicatae) **Kitamurae** Murata in Acta Phytotax. Geobot. XVII: 74 (1958).
Fig. 89.

Nepeta oblanceolata Rech. f. et Edelb. affinis sed foliis paucioribus et majoribus ovato-oblongis basi truncatis vel subcordatis, calycibus non glanduloso-papillosis, internodiis elongatis distinguenda.

Perennis. Caules floriferi 30–60 cm longi, e basi decumbente valde arcuato-ascendentes simplices, quadranguli, hirsuti, internodiis inferioribus 1–3 cm longis, superioribus sensim longioribus 3–1 cm longis. Folia breviter (2–7 mm) petiolata, ovato-



Fig. 89. *Nepeta Kitamurae* Murata : 1 Flower, 2 Nutlets, 3 Bract, 4 Corolla. (Doab).

oblonga 2–4 cm longa 8–18 mm lata, in sicco subcrassiuscule membranacea, supra glabra vel sparse puberula, subtus pilis brevibus papilloso-scabrida et glanduloso-punctata, apice obtusa, margine serrato-crenata, basi truncata vel subcordata. Folia summa subsessilia, floralia valde diminuta lanceolata ca. 8 mm longa 3 mm lata, integra, ciliata, apice acuminata. Verticillastra numerosa contigua, in spicastrum 3–5 cm longum, floribus exclusis ad 14 mm latum congesta. Bractee subulatae calycis aequantes. Flores plurimi brevissime tenuiter pedicellati. Calyx ca. 7 mm longus, anguste tubulosus glanduloso-punctatus et pubescens, basi valde attenuatus, superne sensim paulo ampliatus, ore paulo obliquo, dentibus lineari-subulatis plumoso-hispidis subaequalibus tubo subaequilongis. Corolla 11–12 mm longa, in sicco albida brunnescens, tubo tenui valde curvato exserto, intus exannulato; labium superius ca. 2.5 mm longum, antice profunde incisum; labium inferius ad 3 mm longum deflexum. Stamina 4 inclusa. Nuculae brunneae, laeves, 1.7 mm longae.

Doab (June 24, 1955 S. Kitamura)—Typus in Herb. Univ. Kyoto, Shibar Pass (June 24, 1955 S. K.).

Distr. Afghanistan.

Nepeta laevigata (Don) Hand.-Mzt., Symb. Sin. Anth. IV: 916 (1936).—Rech. f., l. c. 34 (1954).

N. spicata Benth. in Wall., Pl. As. Rar. I: 64 (1830).—Hook. f., l. c. 659 (1885).—Kudo in Mem. Fac. Sci. Agr. Taih. Univ. II: 228 (1929).—Mukerjii, l. c. 123 (1940).

N. lamiopsis (non Benth.) Diels in Not. Bot. Gard. Edinb. VII: 151 (1912).

Retonica laevigata Don, Prodr. Fl. Nepal 110 (1825).

Distr. Afghanistan, Kashmir, Panjab, Kumaon, China: Yunnan, Sezchuan.

Nepeta lagopsis Benth. in DC., Prodr. XII: 397 (1848).—Boiss., l. c. 640 (1879).—Mukerjii, l. c. 130 (1940).

Distr. Afghanistan, Panjab.

Nepeta farakulumensis Murata in Acta Phytotax. Geobot. XVII: 74 (1958).

N. lavandulacea (non L. f.) Rech. f. et Köie ex Rech. f., l. c. 36 (1954).

Distr. Afghanistan.

Nepeta leucocyanea Rech. f. et Köie ex Rech. f., Symb. Afgh. I: 36 (1954).

Distr. Afghanistan.

Nepeta longibracteata Benth., Lab. Gen. Sp. 737 (1853) et in DC., Prodr. XII: 392 (1848).—Hook. f., l. c. 660 (1885).—Mukerjii, l. c. 124 (1940).—Rech. f., l. c. 38 (1954).—Pojark. in Fl. URSS XX: 303 (1954).

Distr. Tibet, Kashmir, Afghanistan, Central Asia.

Nepeta micrantha Bunge in Ledeb., Fl. Alt. II: 401 (1830) et Ic. Pl. Fl. Ross. V: t. 412 (1833).—Boiss., l. c. 664 p. p. (1879).—Aitch., T. L. S. n. III: 97 (1888).—Parsa, Fl. Iran IV: 692, fig. 345 (1949).—Pojark., l. c. 383 (1954).

Nuristan: Between Kushitaki and Pronz (Aug. 4, 1955 S. K.).

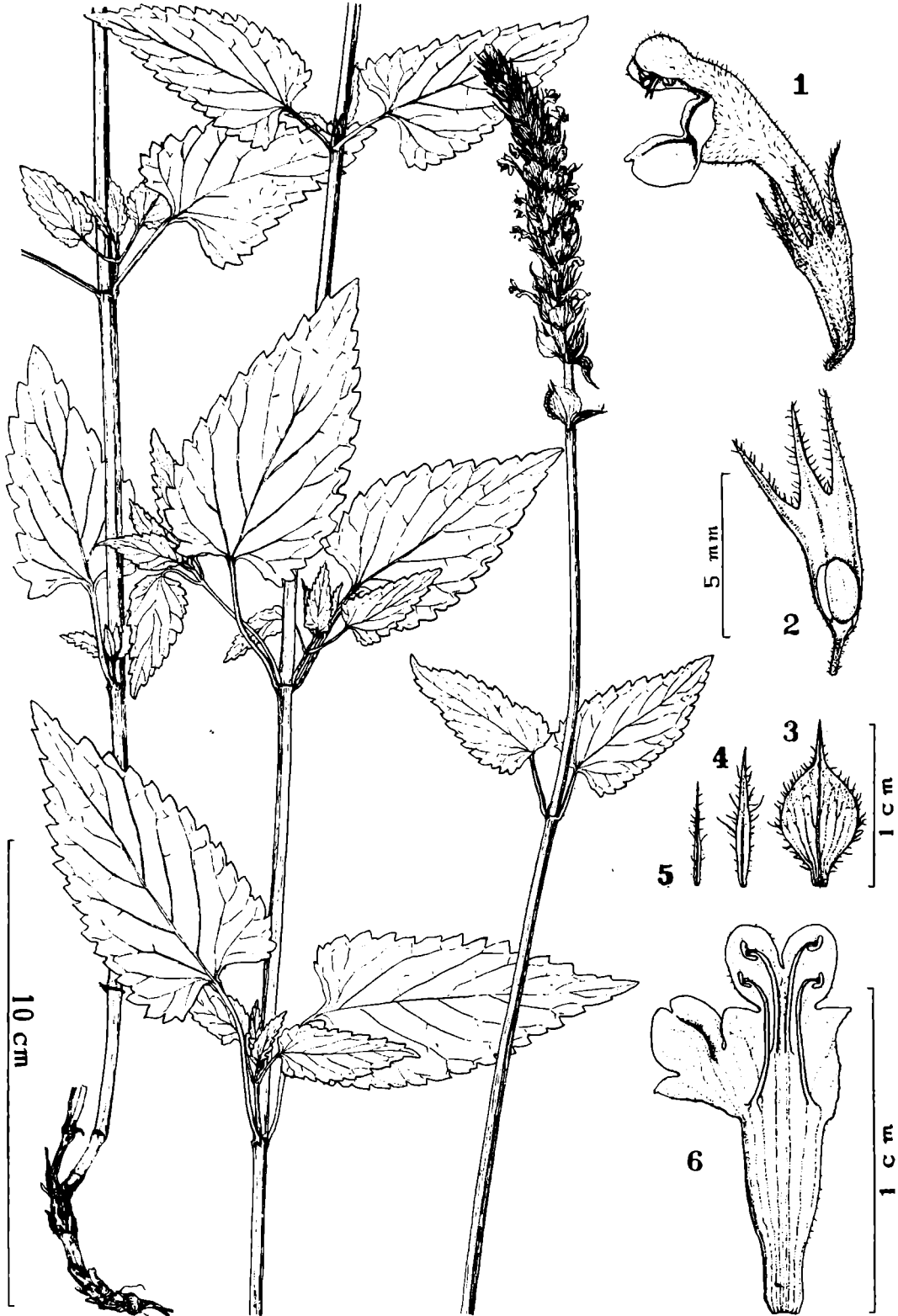


Fig. 90. *Nepeta nuristanica* Murata: 1 Flower, 2 Nutlets, 3 Bracteoles, 5 Corolla. (Nuristan: Between Voma and Trokikorl).

Distr. Iran, Afghanistan, Turkestan, Central Asia, Altai.

Nepeta minjanensis Rech. f., Symb. Afgh. I: 38, fig. 21 (1954).

Distr. Afghanistan.

Nepeta nuristanica Murata in Acta Phytotax. Geobot. XVII: 74 (1958). **Fig. 90.**

Perennis. Caulis erectus quadrangulatus 50–100 cm altus, simplex vel in parte superiore breviter stricte ramosus, glaber vel papillis minutissimis scabridus, internodiis 9–12 cm longis. Folia caulina petiolata, petiolis 1–3 cm longis, laminis ovatis vel deltoideo-ovatis, membranaceis, utrinque glabris, margine serratis, apice acutis, 3–7 cm longis, 15–35 mm latis. Folia superiora sensim minora, conformia, floralia valde diminuta bracteiformia, membranacea, interdum purpurina, late ovata vel ovato-orbiculata, integra, ciliata, apice acuminata, 8–10 mm longa, 3–6 mm lata. Verticillastra numerosa, infima remota, media et superiora in spicastrum conferta. Bractae lanceolatae vel subulatae, tenuiter membranaceae, 1 nervatae, ciliatae, quam calyces subbreviares vel sublongiores. Flores sessiles; calyx 6–7 mm longus anguste cylindraceus, superne sensim paulo ampliatus, tenuiter albidomembranaceus, 15-nervatus, ore obliquo, ut bractae pilis brevissimis tectus, dentibus lanceolato-subulatis, ciliatis, superioribus 2.5 mm longis, inferioribus paulo minoribus. Corolla ad 9 mm longa, ut videtur coerulescens, tubo tenui valde curvato e calyce subexserto; labium superius ca. 2 mm longum leviter curvatum, antice profunde incisum; labium inferius ad 3 mm longum deflexum. Stamina inclusa, thecae coeruleae. Nuculae late ellipsoideae, ca. 1.5 mm longae, atro-fuscae, laeves.

Nuristan, Between Voma and Trokikorl (July 31, 1955 S. Kitamura)—Typus in Herb. Univ. Kyoto, between Trokikorl and Chatrass (Aug. 1, 1955 S. K.).

Distr. Afghanistan.

Nepeta oblanceolata Rech. f. et Edelb. ex Rech. f., Symb. Afgh. I: 38, fig. 22 & 14-f (1954).

Distr. Afghanistan.

Nepeta persica Boiss., Diagn. Ser. I, VII: 66 (1846) et F. O. IV: 657.—Rech. f., l. c. 40 (1954).

Distr. Iran, Afghanistan.

Nepeta pinetorum Aitch. et Hemsl. in Journ. Linn. Soc. XIX: 183 (1882).—Mukerjii, l. c. 129 (1940).

Distr. Afghanistan, Pakistan.

Nepeta podostachys Benth. in DC., Prodr. XII: 372 (1848).—Mukerjii, l. c. 122 (1940).—Rech. f., l. c. 40 (1954).—Pojark. in Fl. URSS XX: 313 (1954).

N. Paulseni Briq. in Bot. Tidskr. XXVIII: 235 (1908).

N. maracandia Bunge in Mém. Sav. Ét. Ac. Sc. Pétersb. VII: 434 (1851).—Boiss., l. c. 640 (1879).

Distr. Afghanistan, Kashmir, Turkestan.

Nepeta Prainii Duthie in Ann. Bot. Gard. Calc. IX: 63, Pl. 77 (1901).—Mukerjii,

l. c. 131 (1940).—Rech. f., *l. c.* 40 (1954).

Distr. Afghanistan, Pakistan.

Nepeta pubescens Benth. in DC., Prodr. XII: 373 (1848).—Boiss., *l. c.* 640 (1879).—Rech. f., *l. c.* 40 (1950).

Distr. Afghanistan.

Nepeta raphanorhiza Benth., Lab. Gen. Sp. 734 (1835), in DC., Prodr. XII: 373 (1848).—Aitch., *l. c.* 87 (1881).—Hook. f., *l. c.* 659 (1885).—Mukerjii, *l. c.* 126 (1940).—Rech. f., *l. c.* 40 (1954).

Distr. Afghanistan, Kashmir.

Nepeta rugosa Benth. in DC., Prodr. XII: 384 (1848).—Aitch., *l. c.* 87 (1881).—Boiss., *l. c.* 644 (1879).

Distr. Afghanistan, Arabia.

Nepeta satureioides Boiss., Diagn. Ser. I, V: 24 (1844), F. O. IV: 667 (1879).—Rech. f., *l. c.* 41 (1954).

Distr. Iran, Afghanistan.

Nepeta Sewerzowii Regel in Acta Horti Petrop. VI: 360 (1879).—Aitch. et Hemsl. in T. L. S. n. III: 96, Pl. 41 (1888).—Parsa, *l. c.* 695 (1949).—Rech. f., *l. c.* 41 (1954).

Drepanocaryum Sewerzowii (Regel) Pojark. in Fl. URSS XX: 228 (1954).

Distr. Afghanistan, Iran, Central Asia.

Nepeta spathulifera Benth. in DC., Prodr. XII: 380 (1848).—Boiss., F. O. IV: 668 (1879).—Mukerjii, *l. c.* 126 (1940).

Distr. Afghanistan, Pakistan.

Nepeta subincisa Benth. in DC., Prodr. XII: 373 (1848).—Boiss., *l. c.* 639 (1879).—Parsa, *l. c.* 661 (1949).

Distr. Afghanistan, Iran.

Nepeta xylorhiza Rech. f., Symb. Afgh. I: 41, fig. 23. (1954).

Distr. Afghanistan.

Ocimum Basilicum L., Sp. Pl. 597 (1753).—Benth., *l. c.*—Boiss., F. O. IV: 539. —Hook. f., *l. c.* 608 (1885).—Kudo, Lab. Sino-Jap. 113 (1929).—Mukerjii, *l. c.* 18 (1940).—Parsa, *l. c.* 551 (1949).

Distr. Ukraina, Caucasus, Iran, Afghanistan, Pakistan, India, China, Malay, Polynesia, Formosa.

Origanum glaucum Rech. f. et Edelb. ex Rech. f., Symb. Afgh. I: 67, fig. 46 & 47 a-d (1954).

Distr. Afghanistan.

var. ***laxius*** Rech. f. et Edelb. ex Rech. f., *l. c.*

Distr. Afghanistan.

Origanum vulgale L., Sp. Pl. 590 (1753).—Benth. in DC., Prodr. XII: 193 (1848).—Hook. f., F. B. I. IV: 648. —Boiss., F. O. IV: 551. —Mukerjii, *l. c.* 94 (1940).—

Parsa, l. c. 563 (1949).—Boriss. in Fl. URSS XXI: 494 (1954).

O. normale Don, Prodr. Fl. Nepal. 113 (1825).—Aitch., J. L. S. XVIII: 86.

O. laxiflorum Royle in Hook., Bot. Misc. III: 376 (1833).—Benth. in DC., Prodr. XII: 194 (1848).—Rech. f., l. c. 76 (1954).

Distr. Himalaya, Afghanistan, W. and N. Asia, N. Africa.

Perowskia abrotanoides Karel. in Bull. Soc. Imp. Nat. Mosc. XV, t. 1 (1841).—Boiss., l. c. 589 (1879).—Hook. f., l. c. 652 (1885).—Mukerjii, l. c. 103 (1940). Parsa, l. c. 599 (1949).—Rech. f., l. c. 72 (1954).—Grossh. in Fl. URSS XXI: 375 p. p. (1954).

Distr. Afghanistan, Iran, Pakistan, Turkestan, Kashmir.

Perowskia artemisioides Boiss., Diagn. Ser. II, IV: 15 (1839), F. O. IV: 589.—Parsa, l. c. 599 (1949).

Distr. Pakistan.

Perowskia atriplicifolia Benth. in DC., Prodr. XII: 261 (1848).—Aitch., l. c. 86 (1881).—Hook. f., l. c. 642 (1885).—Boiss., F. O. IV: 587.—Mukerjii, l. c. 103 (1940).—Rech. f., l. c. 72 (1954).

Lataband, Mullaomur (June 15, 1955 S. K.).

Distr. Afghanistan, Pakistan, Kashmir.

Phlomis bracteosa Royle ex Benth. in Hook., Bot. Misc. III: 383 (1833), Lab. Gen. Sp. 633 (1834), et in DC., Prodr. XII: 545 (1848).—Hook. f., l. c. 693 (1885).—Aitch., l. c. 88 (1881).—Mukerjii, l. c. 197 (1940).—Rech. f., l. c. 54 (1954).

P. lamiifolia Royle ex Benth., l. c.—Aitch., J. L. S. XIX: 184.

Nuristan: Between Kushimaicot and Pushuki (Aug. 3, 1955 S. K.).

Distr. Kumaon, Kashmir, Afghanistan.

Phlomis cancellata Bunge in Mém. Acad. Sc. Pétersb. ser. VII, XXI, 1: 76 (1873).—Boiss., l. c. 789 (1879).—Parsa, l. c. 839 (1949).—Rech. f., l. c. 54 (1954).—Knorr. in Fl. URSS XXI: 83, Tab IV, fig. 3 (1954).

Distr. Caucasus, Iran, Afghanistan, Turkoman.

Phlomis cashmiriana ex Benth. in Hook., Bot. Misc. III: 382 (1833), in DC., Prodr. XII: 542 (1848).—Royle, Illust. 303, t. 75, a (1836).—Aitch., l. c. 88 (1881).—Hook. f., l. c. (1885).—Mukerjii, l. c. 194 (1940).—Rech. f., l. c. 54 (1954).

Distr. Afghanistan, Kashmir, Pakistan.

Phlomis dichroa Rech. f., Symb. Afgh. I: 54, fig. 32 (1954).

Distr. Afghanistan.

Phlomis Olgaie Regel, Pl. Nov. Fedtsch. 68 (1882), in Acta Horti Petrop. IX: 582 (1884).—Knorr. in Fl. URSS XXI: 67, Tab IV, fig. 1 (1954).

Between Pulikhumri and Haibak (June 27, 1955 S. K.), Kunduz (Jul. 8, 1955 S. K.)

Distr. Afghanistan, Turkestan.

Phlomis spectabilis Falc. ex Benth. in DC., Prodr. XII: 542 (1848).—Aitch., l.

c. 88 (1881).—Hook. f., l. c. 692 (1885).—Mukerjii, l. c. 194 (1940).—Parsa, l. c. 844 (1949).

Distr. Pakistan, Afghanistan, Kashmir.

Phlomis thapsoides Bunge in Mém. Acad. Sc. Pétersb. Sav. Étr. VII: 440 (1851).—Boiss., l. c. 791 (1879).—Rech. f., l. c. 56 (1954).—Knorr. in Fl. URSS XXI: 67 (1954).

Distr. Afghanistan, Central Asia.

Phlomis trineura Rech. f., Symb. Afgh. I: 56, fig. 33 (1954).

Distr. Afghanistan.

Prunella vulgaris L., Sp. Pl. 600 (1753).—Benth., l. c. 417 (1833).—Aitch., J. L. S. XVIII: 88.—Kudo, Lab. Sino-Jap. 248 (1929).—Doan, Fl. Gén. Indo-Chine IV: 1008 (1936).—Mukerjii, l. c. 149 (1940).—Rech. f., l. c. 44 (1954).—Boriss. in Fl. URSS XX: 495 (1954).—Hara in Journ. Fac. Sci. Univ. Tokyo III, VI: 369 (1956).

Near Kabul (Jul. 15, 1955 S. K.), between Chatrass and Kushimaicot (Aug. 2, 1955 S. K.), between Trokikorl and Chatrass (Aug. 5, 1955 S. K.).

Distr. Himalayas, Central Asia, Siberia (Jenisei, Yakutsk), Asia Minor, Pakistan Afghanistan, Iran, Caucasus, Europe, N. Africa.

Salvia aegyptica L., Sp. Pl. 23 (1753).—Benth. in DC., Prodr. XII: 355 (1848).—Boiss., F. O. IV: 631 (1879).—Hook. f., l. c. 656 (1885).—P.-Stib. in Fedde, Repert. XXIX: 182 (1936).—Mukerjii, l. c. 107 (1940).

S. pumila Benth., Lab. Gen. Sp. 726 (1835).

Distr. Panjab, Pakistan, Afghanistan, Iran, Arabia, N. Africa.

Salvia bucharica M. Pop. in Trans. Sc. Soc. Turk. I: 46 (1923).

S. Honigbergeri Rech. f. in Ann. Nat. Mus. Wien LI: 48 (1941), l. c. 66, fig. 39 (1954).

S. Hydrangea sensu Bornm. in Engl., Bot. Jahrb. LXVI: 237 (1934)?

Schraderia bucharica (M. Pop.) Nevski in Acta Inst. Bot. Acad. Sc. URSS, Ser. I, IV: 327 (1937).—Pobed. in Fl. URSS XXI: 364, Tab XVIII fig. 3 (1954).

Near Kabul (June 11, 1955 S. K.).

Distr. Afghanistan, Turkestan.

Salvia cabulica Benth. in DC., Prodr. XII: 268 (1848).—Boiss., l. c. 594 (1879).—Mukerjii, l. c. 107 (1940).

Nuristan (1955, S. K.).

Distr. Afghanistan, Pakistan, Panjab.

Salvia ceratophylla L., Sp. Pl. 27 (1753).—Benth., l. c. 287 (1848).—Boiss., F. O. IV: 617.—Pobed. in Fl. URSS XXI: 330 (1954).

Distr. Caucasus, Asia Minor, Syria, Iran, Afghanistan.

Salvia compressa Vahl, Enum. I: 275 (1804).—Benth., l. c. 284 (1848).—Boiss., l. c. 611 (1879).—Parsa, l. c. 616 (1949).

Distr. Afghanistan, Iran.

Salvia Edelbergii Rech. f., Symb. Afgh. I: 63, fig. 38 (1954).

Distr. Afghanistan.

Salvia glutinosa L., Sp. Pl. 26 (1753).—Benth., l. c. 276 (1848).—Boiss., l. c. 609 (1879).—Aitch., l. c. 86 (1881).—Hook. f., l. c. 653 (1885).—P. Stib. in Fedde, Repert. XXXIX: 183 (1936).—Mukerjii, l. c. 113 (1940).—Pobed. in Fl. URSS XXI: 281 (1954).—Rech. f., l. c. 65 (1954).

Nuristan, Trokikori (Aug. 1, 1955 S. K.).

Distr. S. Europe, Caucasus, Afghanistan, Himalayas, Tibet, W. Asia.

Salvia leriaefolia Benth. in DC., Prodr. XII: 287 (1848).—Boiss., l. c. 613 (1879).—Bornm. in Engl., Bot. Jahrb. LXVI: 237 (1934).—Rech. f., l. c. 66 (1954).

Distr. Afghanistan, Iran.

Salvia macilentha Boiss., Diagn. Ser. I, V: 13 (1844), F. O. IV: 633.—Rech. f., l. c. 66 (1954).

Distr. Afghanistan, Arabia.

Salvia macrosiphon Boiss., Diagn. Ser. I, V: 11 (1844).—Benth. in DC., Prodr. XII: 282 (1848).—Aitch., l. c. 86 (1881).—Mukerjii, l. c. 109 (1940).—Parsa, l. c. 624 (1949).

S. Kotschyi Boiss., Diagn. Ser. I, VII: 46 (1846).

S. macrosiphon var. *Kotschyi* (Boiss.) Boiss., F. O. IV: 615.

Distr. Afghanistan, Iran, Pakistan.

var. **cabulica** Benth. in DC., Prodr. XII: 282 (1848).—Bornm., l. c. 237 (1934).

Distr. Afghanistan, Pakistan.

Salvia Moorcroftiana Wall. ex Benth. in Wall., Pl. As. Rar. I: 67 (1830).—Benth., Lab. Gen. Sp. 228 (1833), in DC., Prodr. XII: 286 (1848).—Hook. f., l. c. 654 (1885).—P. Stib. in Fedde, Rep. XXXIX: 185 (1936).—Mukerjii, l. c. 110 (1940).—Rech. f., l. c. 66 (1954).

Distr. Afghanistan, Pakistan, Panjab, Kashmir.

Salvia plebeia R. Br., Prodr. 501 (1810).—Aitch., l. c. 86 (1881).—Hook. f., l. c. 655 (1885).—P. Stib., l. c. 181 (1934).—Mukerjii, l. c. 111 (1940).—Hara, Enum. Sperm. Jap. I: 224 (1948).

S. brachiata Roxb., Fl. Ind. I: 145 (1820).—Kudo, Lab. Sino-Jap. 174 (1929).

Distr. Afghanistan, India, Malaya, China, Japan, Australia.

Salvia polyclada Rech. f., Symb. Afgh. I: 69, fig. 42 & 43 c (1954).

Doab (June 24, 1955 S. K.), between Zarmast-pass and Herat (July 5, 1955 K. Yamashita), Taiwara (Sept. 8, 1955 T. Umesao).

Distr. Afghanistan.

Salvia polychroma Rech. f. et Edelb. ex Rech. f., Symb. Afgh. I: 66, fig. 41 (1954).

Distr. Afghanistan.

Salvia rhytidea Benth. in DC., Prodr. XII: 280 (1848).—Boiss., F. O. IV: 640.

—Aitch., J. L. S. XVIII: 86.—Mukerjii, l. c. 110 (1940).—Rech. f., l. c. 72 (1954).
Distr. Afghanistan.

Salvia santolinaefolia Boiss., Diagn. Ser. I, V: 13 (1844), F. O. IV: 632.
—Hook. f., l. c. 656 (1885).—P. Stib., l. c. 182 (1934).—Mukerjii, l. c. 108 (1940).
—Rech. f., l. c. 72 (1954).

“*S. pumila*” Aitch., J. L. S. XIX: 183 (1882).

Distr. Iran, Afghanistan, Pakistan, Panjab.

Salvia Sclarea L., Sp. Pl. 27 (1753).—Benth., Lab. Gen. Sp. 224 (1833), in DC., Prodr. XII: 281 (1848).—Boiss., F. O. IV: 646.—Bornm. in Engl., Bot. Jahrb. LXVI: 240 (1933).—Rech. f., l. c. 72 (1954).—Pobed. in Fl. URSS XXI: 310 (1954).
Doab (June 24, 1955 S. K.).

Distr. Europe, Caucasus, Iran, Afghanistan, Central Asia, N. Africa.

Salvia spinosa L., Mant. II: 511 (1771).—Benth., Lab. Gen. Sp. 224 (1833).
—Boiss., l. c. 613 (1879).—Mukerjii, l. c. 109 (1940).—Rech. f., l. c. 72 (1954).—Pobed. in Fl. URSS XXI: 300 (1954).

Distr. N. Africa, Syria, Arabia, Caucasus, Iran, Afghanistan, Central Asia.

var. **stenosiphon** Bornm. in Engl., Bot. Jahrb. LXVI: 239 (1934).

Distr. Afghanistan.

Scutellaria Edelbergii Rech. f., Symb. Afgh. I: 15 (1954).

Nuristan, Eschtaway (Aug. 5, 1955 S. K.), Chatrass (Aug. 2, 1955 S. K.), between Voma and Trokikorl (Jul. 31, 1955 S. K.), between Trokikorl and Chatrass (Aug. 1, 1955 S. K.).

Distr. Afghanistan.

Scutellaria Heydei Hook. f., F. B. I. IV: 667 (1885).—Mukerjii, l. c. 141 (1940).—Rech. f., l. c. 17 (1954).

S. glutinosa var.? Aitch., J. L. S. XIX: 183.

Distr. N. W. Himalaya, Afghanistan.

Scutellaria Koelzii Rech. f., Symb. Afgh. I: 17, fig. 4 (1954).

Pagman, near Kabul (Jul. 15, 1955 S. K.).

Distr. Afghanistan.

Scutellaria leptosiphon Nevski in Acta Inst. Bot. Acad. URSS Ser. I, IV: 324 (1937).—Juz. in Fl. URSS XX: 225 (1954).—Rech. f., l. c. 19 (1954).

Distr. Afghanistan, Central Asia.

Scutellaria linearis Benth. in Wall., Pl. As. Rar. I: 66 (1830), Lab. Gen. Sp. 435 (1834), in DC., Prodr. XII: 423 (1848).—Hook. f., l. c. 669 (1885).—Mukerjii, l. c. 142 (1940).

Distr. Afghanistan, Kashmir, Simula, Kumaon, Hazara.

Scutellaria Litwinowii Bornm. et Sint. in Journ. Russ. Bot. I: 8 (1914).—Juz. in Fl. URSS XX: 120 (1954).—Rech. f., l. c. 19 (1954).

S. multicaulis sensu Aitch., J. L. S. XIX: 184 (1882) non Boiss.

Distr. Iran, Afghanistan, Turkestan.

Scutellaria lorinjensis Rech. f. et Fitz. ex Rech. f., Symb. Afgh. I: 19, fig. 5 (1954).

Charikar (June 23, 1955 S. K.).

Distr. Afghanistan.

Scutellaria macrochlamys Rech. f. et Fitz. ex Rech. f., Symb. Afgh. I: 21, fig. 6 (1954).

Distr. Afghanistan.

Scutellaria multicaulis Boiss., Diagn. Ser. I, VII: 61 (1846).—Benth. in DC., Prodr. XII: 414 (1848).—Prain in Journ. As. Soc. Beng. LIX: 307 (1890).—Mukerjii, l. c. 143 (1940).—Parsa, Fl. Iran IV: 741 (1949).

S. nepetaefolia Benth. in DC., Prodr. XII: 414 (1848).

Distr. Pakistan, Gilgit, Afghanistan, Iran.

var. **cabulica** Benth. in DC., Prodr. XII: 414 (1848).—Boiss., F. O. IV: 685 (1879).—Parsa, l. c. 742 (1949).

Distr. Afghanistan, Iran.

Scutellaria Neubaueri Rech. f., Symb. Afgh. I: 22, fig. 7 (1954).

Distr. Afghanistan (Nuristan).

Scutellaria nuristanica Rech. f., Symb. Afgh. I: 22, fig. 8 (1954).

Nuristan: Between Seprigal and Voma (Jul. 29, 1955 S. K.), Eastern Prov. between Kandai and Seprigal (Jul. 28, 1955 S. K.).

Distr. Afghanistan.

Scutellaria petiolata Hemsl. ex Lace et Prain in Journ. As. Soc. Beng. LIX: 308 (1890).—Hemsl. et Lace in Journ. Linn. Soc. XXVIII: 326 (1891).—Mukerjii, l. c. 143 (1940).—Parsa, Fl. Iran IV: 747 (1949).

Distr. Pakistan, S. Afghanistan.

Scutellaria poliochlora Rech. f. et Edelb. ex Rech. f., Symb. Afgh. I: 24, fig. 9 (1954).

Distr. Afghanistan (Nuristan).

Scutellaria polyadenia Rech. f., Symb. Afgh. I: 24, fig. 10 (1954).

Distr. Afghanistan.

Sideritis montana L., Sp. Pl. 575 (1753).—Benth. in DC., Prodr. XII: 446 (1848).—Boiss., F. O. IV: 706 (1879).—Rech. f., l. c. 26 (1954).—Juz. in Fl. URSS XX: 268 (1954).

Between Doab and Pulikhumri (June 26, 1955 S. K.).

Distr. S. E. Europe, Afghanistan, Central Asia, N. Africa.

Stachys arvensis L., Sp. Pl. 814 (1762).—Benth., Lab. Gen. Sp. 550 (1834), in DC., Prodr. XII: 477 (1848).—Boiss., l. c. 747 (1879).—Parsa, l. c. 800 (1949).—Rech. f., l. c. 60 (1954).—Knorr. in Fl. URSS XXI: 237 (1954).

Distr. Afghanistan, Iran, Europe, N. Africa.

Stachys floccosa Benth., Lab. Gen. Sp. 739 (1835), in DC., Prodr. XII: 465 (1848).—Aitch., J. L. S. XVIII: 88.—Hook. f., l. c. 675 (1885).—Mukerjii, l. c. 187 (1940).

Nuristan, Voma (Jul. 30, 1955 S. K.).

Distr. Kashmir, Pakistan, Afghanistan.

Stachys hissarica Regel in Acta Horti Petrop. IX: 614 (1886).—Rech. f., l. c. 60 (1954).—Knorr. in Fl. URSS XXI: 210, Tab XI, fig. 2 (1954).

Distr. Afghanistan, Turkestan.

Stachys maleolens Rech. f., Symb. Afgh. I: 60, fig. 36 & 37 d (1954).

Distr. Afghanistan.

Stachys parviflora Benth. in DC., Prodr. XII: 490 (1848).—Boiss., F. O. IV: 740.—Aitch., J. L. S. XVIII: 88.—Bornm. in Engl., Bot. Jahrb. LXVI: 240 (1933).—Mukerjii, l. c. 187 (1940).—Rech. f., l. c. 63 (1954).

Phlomidioschema parviflorum (Benth.) Vved. in Notulae Systematicae Herb. Inst. Bot. Kom. Ac. Sci. URSS IX, 1: 54 (1941).—Knorr. in Fl. URSS XXI: 242 (1954).

Distr. Afghanistan, Pakistan, Panjab, Pamir.

Stachys sericea Wall., Pl. As. Rar. I: 64 (1830).—Benth., l. c. 537 (1834), in DC., Prodr. XII: 465 (1848).—Hook. f., F. B. I. IV: 675.—Mukerjii, l. c. 188 (1940).

Distr. Kashmir, Kumaon, Nepal, Afghanistan.

Stachys trinervius Aitch. et Hemsl., T. L. S. n. III: 47, t. 43 (1886).—Parsa, Fl. Iran IV: 784, fig. 397 (1949).—Rech. f., l. c. 63 (1954).

Distr. Afghanistan, Iran.

Teucrium Edelbergii Rech. f., Symb. Afgh. I: 13, fig. 1 & 2 (1954).

Nuristan: Voma (Jul. 30, 1955 S. K.).

Distr. Afghanistan.

Teucrium incanum Aitch. et Hemsl. ex Aitch., J. L. S. XIX: 184.—Mukerjii, l. c. 217 (1940).

Distr. Pakistan (Kuram).

Teucrium Polium L., Sp. Pl. 566 (1753).—Benth., Lab. Gen. Sp. 685 (1835).—Boiss., F. O. IV: 821.—Parsa, l. c. 881 (1949).—Juz. in Fl. URSS XX: 68 (1954).—Rech. f., l. c. 15 (1954).

Distr. Europe, Caucasus, Iran, Afghanistan, Central Asia, N. Africa.

Teucrium Royleanum Wall. ex Benth. in Wall., Pl. As. Rar. I: 58 (1830) et in DC., Prodr. XII: 583 (1848).—Hook. f., l. c. 700 (1885).—Mukerjii, l. c. 218 (1940).

Distr. Afghanistan, Pakistan, Panjab, Kumaon.

Teucrium scordium L., Sp. Pl. 565 (1753).—Benth., l. c. 586 (1848).—Boiss., l. c. 812 (1879).—Aitch., l. c. 184 (1882).—Hook. f., l. c. 702 (1885).—Mukerjii, l. c. 216 (1940).—Juz. in Fl. URSS XX: 46 (1954).

Distr. Kashmir, Afghanistan, Central Asia, W. Siberia, Europe, N. Africa.

Teucrium serratum Benth. in DC., Prodr. XII: 586 (1848).—Boiss., l. c. 813 (1879).—Prain in Journ. As. Soc. Beng. LIX: 317 (1890).—Rech. f., l. c. 15 (1954).

Between Siyagird and Charikar (Jul. 11, 1955 S. K.).

Distr. Afghanistan.

var. **glabrescens** Murata in Acta Phytotax. Geobot. XVII: 75 (1958).

T. serratum sensu Mukerjii in Rec. Bot. Surv. Ind. XIV: 216 (1940), non Benth.

Planta in toto minute pubescens vel subglabrescens, cetera ut typo.

Nuristan: between Voma and Trokikorl (Jul. 31, 1955 S. Kitamura) Typus in Herb. Univ. Kyoto.

Distr. Afghanistan (Nuristan), Kashmir, Pakistan.

Teucrium Stocksianum Boiss., Diagn. Ser. II, IV: 58 (1839), F. O. IV: 821.—Mukerjii, l. c. 217 (1940).—Parsa, l. c. 879, fig. 458 (1949).

Eastern Prov. between Kandai and Monogai (Aug. 15, 1955 S. K.).

Distr. Afghanistan, Pakistan, Panjab.

Thuspeinantha Brahuica (Boiss.) Briq. in Engl. u. Prantl, Nat. Pfl.-fam. IV, 3-a: 229 (1897).—Parsa, l. c. 729 (1949).

Tapeinanthus Brahuicus Boiss., Prodr. Ser. II, IV: 29 (1859).

Chamaesphacos Brahuicus (Boiss.) Aitch. et Hemsl., T. L. S. n. III: 97.—Prain, l. c. 309 (1890).—Mukerjii, l. c. 150 (1940).

Distr. Iran, Afghanistan, Pakistan, Panjab.

Thuspeinantha persica (Boiss.) Briq. in Engl. u. Prantl, Pfl.-fam. IV, 3-a: 229 (1897).—Boiss. in Fl. URSS XX: 232 (1954).

Tapeinanthus persicus Boiss., Diagn. Ser. I, XII: 63 (1848), l. c. 679 (1879). Benth. in DC., Prodr. XII: 436 (1848).

Chamaesphacos persicus (Boiss.) Aitch. et Hemsl., l. c. 97, t. 42, fig. 1-6 (1838).

Distr. Iran, Afghanistan.

Thymus afghanicus Ronniger ex Rech. f., Symb. Afgh. I: 77, fig. 48 (1954).

Distr. Afghanistan.

Thymus coriifolius Ronniger in Fedde, Repert. XXXI: 147 (1932).—Rech. f., l. c. 78, fig. 49 (1954).—Klok. in Fl. URSS XXI: 505 (1954).

Distr. Afghanistan, Caucasus.

var. **Edelbergii** Ronn. ex Rech. f., l. c. 78 (1954).

Distr. Afghanistan.

Thymus Koeieanus Ronniger ex Rech. f., Symb. Afgh. I: 78, fig. 50 (1954).

Between Zarmast-pass and Herat (July 5, 1955 K. Yamashita).

Distr. Afghanistan.

Thymus pseudalbanus Ronn. ex Rech. f., Symb. Afgh. I: 79 (1954).

Distr. Afghanistan (Nuristan).

var. **angustifrons** Ronn. ex Rech. f., l. c.

Distr. Afghanistan (Nuristan).

Thymus Serpyllum L. subsp. **quinquecostatus** (Celak.) Kitam. in Fauna & Flora Nepal Himal. 216 (1955). **Fig. 27.**

T. quinquecostatus Celak. in Öster. Bot. Zeitschr. XXXIX: 263 (1889).—Ronn. in Acta Horti Goth. IX: 99 (1934).

T. Serpyllum sensu Hook. f., l. c. 649 (1885).—Mukerjii, l. c. 95 (1940) non L.

T. Serpyllum var. *ibukiensis* Kudo, Lab. Sino-Jap. 92 (1929).

T. quinquecostatus var. *ibukiensis* et var. *japonicus* Hara, Enum. Sperm. Jap. I: 233 (1948), in Journ. Fac. Sci. Univ. Tokyo III, VI: 370 (1956).

T. japonicus Kitagawa in Journ. Jap. Bot. XXVII: 205 (1952).

Nuristan: Between Seprigal and Voma (Aug. 29, 1955 S. K.), Eschtaway (Aug. 5, 1955 S. K.).

Distr. Afghanistan (Nuristan), Pakistan, Himalayas, China, Manchuria, Japan.

Zataria bracteata Boiss., Diagn. Ser II, IV: 12 (1859).—Mukerjii, l. c. 93 (1940).

Z. multiflora var. *elatio*r Boiss., F. O. IV: 562.

Distr. Afghanistan, Pakistan

Ziziphora afghanica Rech. f. in Phytion III: 169 (1951), Symb. Afgh. I: 72, fig. 44 (1954).

Nuristan: Chatrass (Aug. 2, 1955 S. K.), between Kushimaicot and Pushuki (Aug. 3, 1955 S. K.).

Distr. Afghanistan.

Ziziphora clinopodioides Lam., Illustr. I: 63 (1791).—Benth., Lab. Gen. Sp. 320 (1833), in DC., Prodr. XII: 364 (1848).—Boiss., l. c. 585 (1879).—Aitch., l. c. 86 (1881).—Mukerjii, l. c. 117 (1940).—Juz. in Fl. URSS XXI: 398, Tab. XX, fig. 4 (1954).

Z. canescens Benth., l. c. 321 (1833).—Aitch. et Hemsl., T. L. S. n. III: 96 (1888).

Z. clinopodioides var. *canescens* Boiss., F. O. IV: 585.

Nuristan: Trokikorl (Jul. 31, 1955 S. K.).

Distr. Armenia, Iran, Afghanistan, Pakistan, Central Asia, Altai.

Ziziphola pseudodasyantha Rech. f. in Phytion III: 167 (1951), Symb. Afgh. I: 73 (1954).

Distr. Afghanistan, Caucasus, Iran.

Ziziphola tenuior L., Sp. Pl. 21 (1753).—Benth. in DC., Prodr. XII: 366 (1848).—Aitch., J. L. S. XVIII: 86.—Boiss., l. c. 587 (1879).—Aitch. et Hemsl., T. L. S. n. III: 96 (1888).—Bornm., l. c. 237 (1934).—Mukerjii, l. c. 117 (1940).—Rech. f., l. c. 73 (1954).—Juz. in Fl. URSS XXI: 408 (1954).

Faldermannia parviflora Trautv. in Bull. Acad. Sc. Pétersb. VII: 22 (1840).

Lataband, Mullaomur (June 15, 1955 S. K.), Shishigar (July 10, 1955 S. K.).

Distr. Caucasus, Iran, Afghanistan, Pakistan, Central Asia, Kirghis.

Solanaceae

Atropa Belladonna L., Sp. Pl. 181 (1753).—Boiss., F. O. IV : 291 (1875).—Clarke, F. B. I. IV : 241.

Atropa acuminata Royle, Ill. Him. Mount. 279 (1835).—Pojark. in Fl. URSS XXII : 75 (1955).

Atropa lutescens Jacquemont ex Clarke, l. c. pro syn.—Aitch., J. L. S. XVIII : 82.

Nuristan : Between Trokikorl and Chatrass (Aug. 2, 1955 S. K.).

Not so distinctly different from European *A. Belladonna*.

Distr. Eurasia.

Capsicum annuum L., Sp. Pl. 188 (1753).

C. frutescens Aitch. (non L.), J. L. S. XVIII : 82.—Clarke, F. B. I. IV : 239.

Kunduz at Experimental farm cult. (July 8, 1955 S. K.).

Distr. Cult.

Datura Metel L., Sp. Pl. 179 (1753).—Clarke, F. B. I. IV : 243.—Pajark. in Fl. URSS XXII : 112 (1955).—Rech. f., l. c. 88.

Kalatus-siraj (June 16, 1955 S. K.)—escaped.

Distr. A native of Tropical America.

Datura Stramonium L., Sp. Pl. 179 (1753).—Aitch., J. L. S. XVIII : 83, T. L. S. n. III : 92.—Rech. f., l. c. 88.

Between Kabul and Sarobi (June 15, 1955 S. K.), Kunduz (July 6, 1955 S. K.).

Distr. Cosmopolitan cult. pl. very often naturalized.

Hyoscyamus afghanicus Pojark. in Journ. Bot. URSS XXVII, 6 : 128 (1942).—Rech. f., l. c. 84.

Distr. Afghanistan.

This species is unknown to the writer.

Hyoscyamus leucanthera Bornm. et Gauba in Fedde, Rep. XLI : 329, Tab. 230–2 (1937).—Rech. f., l. c. 84.

Distr. Iran, Afghanistan.

Hyoscyamus multicaulis Rech. f., l. c. 85, Fig. 31 (1959).

Distr. Afghanistan.

Hyoscyamus muticus L., Mant. I : 45 (1767).—Boiss., F. O. IV : 293.—Clarke, F. B. I. IV : 245.—Jaub. et Spach, Ill. V : t. 415.—Rech. f., l. c. 85.

Between Jalalabad and Sarobi (June 17, 1955 S. K.), Jalalabad (June 16, 1955 S. K.).

Distr. Egypt, Arabia, Iran, Afghanistan, Pakistan.

Hyoscyamus niger L., Sp. Pl. 179 (1753).—Boiss., F. O. IV : 295.—Aitch., J. L. S. XVIII : 83.—Clarke, F. B. I. IV : 244.—Pojark. in Fl. URSS XXII : 93 (1955).—Rech. f., l. c. 85.

Istalif (June 15, 1955 H. Kihara), Pagman near Kabul (May 20, 1956 K. Yama-

shita), Ghazni (June 7, 1955 H. Kihara).

Distr. Eurasia, Afghanistan, Pakistan: Quila Abdullah (May 25, 1955 S. K.).

The Afghan and Pakistan plants have usually triangular lanceolate calyx-lobes with robust spine, while typical plants have shortly triangular calyx-lobes.

Hyoscyamus pusillus L., Sp. Pl. 180 (1753).—Aitch., J. L. S. XVIII: 83, T. L. S. n. III: 92.—Boiss., F. O. IV: 294.—Clarke, F. B. I. IV: 245.—Jaub. et Spach, Ill. V: t. 414.—Pojark. in Fl. URSS XXII: 98 (1955).—Rech. f., l. c. 85.

Between Bulola and Doab (June 25, 1955 S. K.)—post anthesin, Bulola (June 25, 1955 S. K.)—post anth.

Distr. Eastern Europe, Asia Minor, Caucasus, Aralo-Casp., Iltish, Turkestan, Pakistan, Kashmir, Iran, Afghanistan.

Hyoscyamus reticulatus L., Sp. Pl. 2 ed. 257 (1762).—Boiss., F. O. IV: 295.—Aitch., J. L. S. XVIII: 83, T. L. S. n. III: 92.—Pojark. in Fl. URSS XXII: 88 (1955).—Jaub. et Spach, Ill. V: t. 416.

Distr. Asia Minor, Caucasus, Mesopotamia, Iran, Afghanistan.

Hyoscyamus Senecionis Willd., Enum. Hort. Berol. I: 228 (1809).—Rech. f., l. c. 85.

Distr. Iran, Afghanistan

Lycium barbatum L., Sp. Pl. 192 (1753).—Boiss., F. O. IV: 289.—Clarke, F. B. I. IV: 241.—Aitch., T. L. S. n. III: 91.—Pojark. in Fl. URSS XXII: 82 (1955).—Rech. f., l. c. 84.

Distr. Eastern Europe, Caucasus, Asia Minor, Mesopotamia, Turkestan, Iran, Afghanistan, Pakistan.

Lycium persicum Miers. var. *leptophyllum* (Dun.) Hayek is reported by Rechinger, l. c. 84.

Lycium ruthenicum Murr. in Comm. Soc. Sc. Gotting. II: 9 (1780).—Boiss., F. O. IV: 290.—Aitch., T. L. S. n. III: 91.—Clarke, F. B. I. IV: 241.—Pojark. in Fl. URSS XXII: 80 (1955).—Rech. f., l. c. 84.

L. tataricum Pall., Fl. Ross. I: tab. XLIX.

Between Doab and Pulikhumri (June 26, 1955 S. K.).

Distr. Eastern Europe, Caucasus, Transcaucasia, Turkestan, Iran, Afghanistan, Pakistan.

Lycium turcomanicum Turcz. ex Miers in Ann. a. Mag. Nat. Hist. ser. 2, XIV: 183 (1854).—Boiss., F. O. IV: 290.—Pojark. in Not. Syst. Kom. XIII: 248 fig. 4 (1950), l. c. 78 (1955).—Rech. f., l. c. 84.

Doab (July 11, 1955 S. K.).

Distr. Eastern Europe, Caucasus, Turkestan, Iran, Afghanistan.

Nicotiana rusticana L., Sp. Pl. 180 (1753).—Aitch., J. L. S. XVIII: 83, T. L. S. n. III: 92.—Clarke, l. c. 245.—Pajark. in Fl. URSS XXII: 108 (1955).—Bonnier, Fl. Comp. VIII: tab. 433, f. 2027. **Fig. 17.**

Between Mazarisharif and Haibak (July 1, 1955 S. K.)—cult.

Distr. Cultivated. A native of Mexico.

Nicotiana Tabacum L., Sp. Pl. 180 (1753).—Aitch., T. L. S. n. III: 92.
—Clarke, l. c. 245.—Pojark., l. c. 206 (1955).

Distr. A native of America.

Physalis Alkekengi L., Sp. Pl. 183 (1753).—Rech. f., l. c. 88.

Distr. Europe, Caucasus, Central Asia, Asia Minor, Iran, Afghanistan.

Physalis minima L., Sp. Pl. 183 (1753).—Aitch., T. L. S. XVIII: 180.—Clarke,
F. B. I. IV: 238.

Kunduz, Experimental farm (July 8, 1955 S. K.).

Distr. Tropical Asia, Africa and Australia.

Solanum asiae-medicae Pojark. in Fl. URSS XXII: 21, Tab. I-2 (1955).

Solanum dulcamara (non L.) Aitch., J. L. S. XVIII: 82.—Rech. f., l. c. 88.

Charikar (June 25, 1955 S. K.).

Distr. Afghanistan, Syr-Dar., Pam.—Al.

Solanum coagulans Forsk., Fl. Aegypt.—Arab. 47 (1775).—Boiss., F. O. IV: 286.
—Aitch., J. L. S. XIX: 179.—Clarke, F. B. I. IV: 236.

Distr. Abyssinia, Egypt, Arabia, Syria, Iran to Afghanistan, Pakistan.

Solanum gracilipes Decne. in Jacquemont, Voy. Bot. 113, t. 119 (1844).—Aitch.,
J. L. S. XIX: 179.—Clarke, F. B. I. IV: 237.

Distr. Pakistan.

Solanum Melongena L., Sp. Pl. 186 (1753).—Aitch., J. L. S. XVIII: 82.
—Clarke, F. B. I. IV: 235.

Kunduz, Experimental farm cultivated (July 8, 1955 S. K.)—native name Baden-jane-siya.

Distr. A native of India. This is the western form with black skin. The fruits of the eastern form have also black skin, but white under the calyx lobes.

Solanum nigrum L., Sp. Pl. 186 (1753).—Boiss., F. O. IV: 284.—Aitch., J. L. S. XVIII: 82, T. L. S. n. III: 91.—Clarke, F. B. I. IV: 229.—Pojark. in Fl. URSS XXII: 251 (1955).—Rech. f., l. c. 88.

Nuristan: Between Seprigal and Voma (July 29, 1955 S. K.), Kandahar (June 8, 1955 S. K.), Sarobi (June 16, 1955 S. K.).

Distr. Cosmopolitan.

The Afghan plants have shortly racemose inflorescences.

Solanum Olgae Pajark. in Fl. URSS XXII: 30, Tab. I-3 (1955).

Nuristan: Between Seprigal and Voma (July 29, 1955 S. K.).

Distr. Central Asia, Dz.-Kashg., Afghanistan.

Rechinger, l. c. 88 reported *Solanum alatum* Moench from Afghanistan.

Solanum pseudoflavum Pojark. in Fl. URSS XXII: 35 (1955), in Not. Syst. Kom. XVII: 338 cum Fig. 1 (1955).

Distr. Central Asia, Afghanistan, Iran.

Solanum tuberosum L., Sp. Pl. 185 (1753).—Aitch., J. L. S. XVIII: 82.

Distr. Cultivated. A native of South America.

Solanum xanthocarpum Schrad. et Wendl., Sert. Hanov. I: 8, t. 2 (1795).

—Hooker f., F. B. I.: IV: 236.—Rech. f., l. c. 88.

Distr. Afghanistan, Pakistan, India, Malaya, Trop. Australia, Polynesia.

Withania coagulans Dunal in DC., Prodr. XIII, 1: 685 (1852).—Boiss., F. O. IV: 288.—Aitch., J. L. S. XVIII: 82.—Clarke, F. B. I. IV: 240.—Rech. f., l. c. 87.

Puneria coagulans Stocks in Hooker, Ic. t. 801 (1852).—Wight, Ic. t. 1616 (1850).

Sarobi (June 16, 1955 S. K.).

Distr. Pakistan, Afghanistan.

A shrub with gray leathery leaves growing on rocks along the Kabul River.

Withania somnifera Dunal, l. c. 453.—Aitch., J. L. S. XIX: 180 (1882).—Boiss., F. O. IV: 287.—Clarke, F. B. I. IV: 239.—Rech. f., 87.

Distr. Mediterranean Reg. to Iran and Pakistan.

Lycopersicum esculentum Miller, native name Bodenjane-rumi is cultivated and sold at the market.

*Scrophulariaceae** by Takashi Yamazaki

Celsia coromandeliana Vahl, Symb. III: 75 (1794).—Boiss., F. O. IV: 358.—Hooker f., F. B. I. IV: 251. Wight, Ic. t. 1406.

Distr. Afghanistan, Pakistan, India, Ava, China.

Celsia heterophylla Desf. in Pers., Syn. II: 161 (1807).—Boiss., F. O. IV: 359.—Aitch., T. L. S. n. III: 92.—Fedtsch. in Fl. URSS XXII: 171 (1955). Jaub. et Spach, Ill. Or. t. 404.

Distr. Caucasus, Arm.—Kurd., Iran, Afghanistan, Pam.—Al.

Chaenorrhinum Johnstonii (Stapf) Pennel in Acad. Nat. Sc. Philad. Monogr. V: 61 (1943).—Rech. f., Symb. Afgh. IV: 101 (1959).

Distr. Afghanistan, Pakistan.

Chaenorrhinum rytidospermum (Fisch. et Mey.) Kuprian. in Fl. URSS XXII: 228 (1955).

Linaria persica Boiss., F. O. IV: 284 p. p.—Aitch., T. L. S. n. III: 93.

Distr. Caucasus, Aralo-Kasp., Iran, Afghanistan (W).

Dodartia orientalis L., Sp. Pl. 633 (1753).—Boiss., F. O. IV: 424.—Aitch., T. L. S. n. III: 93.—Gorshkova in Fl. URSS XXII: 319 (1955).—Rech. f., Symb. Afgh. IV: 107 (1959).—Bot. Mag. t. 2199.—Jaub. et Spach, Ill. Or. t. 410.

Doab (July 10, 1955 S. K.).

Distr. Central and Southern Russia, W. Siberia, Central Asia (common), Iran, Afghanistan, Dz.-Kashg., Mongolia.

* The enumeration of species without specimen was added by Siro Kitamura.

Euphrasia himalayica Wettstein, Monogr. Euph. 180 (1896).—Rech. f., l. c. 111.—**Fig. 25.**

Distr. Afghanistan, Himalayas.

E. himalayica grows abundantly near Pech River forming pure associations.

Euphrasia kurramensis Pennell, l. c. 104 (1943).

Euphrasia officinalis (non L.) Aitch., J. L. S. XVIII: 84.

Distr. Afghanistan, Pakistan.

Euphrasia nuristanica Rech. f., l. c. 111, Fig. 42 (1959).

Distr. Afghanistan (Nuristan).

Euphrasia paghmanensis Rech. f., l. c. 113, Fig. 43 (1959).

Distr. Afghanistan.

Euphrasia Regelii Wettstein, l. c. 81, Tab. III, f. 111–119, Tab. XI, f. 6.—Juzep. in Fl. URSS XXII: 589, Tab. XXVIII–1 (1955).

Distr. Tianshan, Pam.–Al., Dz.–Kashg., Afghanistan.

Herpestis Monniera H. B. & K., Nov. Gen. et Sp. II: 366.—Boiss., F. O. IV: 426. Bot. Mag. t. 2557.

Distr. Pantropic.

Kickxia elatine Dum., Fl. Belg. 35 (1827).—Cufodontis in Symb. Afgh. IV: 90 (1959).

Distr. Europe, Central Asia, Afghanistan, Pakistan.

Kickxia incana (Wallich) Pennell in Monogr. Acad. Sci. Philad. V: 59 (1943).—Cufodontis in Symb. Afgh. IV: 90 (1959).

Linaria incana Wall., Pl. Asiat. Rar. II: 43 (1831).

Linaria cabulica Benth. in DC., Prodr. X: 270 (1846).—Boiss., F. O. IV: 368. Hooker f., F. B. I. IV: 251.

Sarobi (June 16, 1955 S. K.).

Distr. Afghanistan, Pakistan, Himalayas.

Kickxia ovata (Boiss.) Kitam. comb. nov.

Linaria ovata Boiss., F. O. IV: 369 (1879).

Distr. Afghanistan (Kandahar).

Kickxia ramosissima (Wall.) Janchen in Öst. Bot. Zeit. LXXXII: 152 (1933).—Cufodontis, l. c. 90.

Linaria ramosissima Wall., Pl. As. Rar. II: 43, t. 153 (1831).—Boiss., F. O. IV: 368.—Aitch., J. L. S. XIX: 180.—Hooker f., F. B. I. IV: 251.

Distr. Afghanistan, Pakistan, India, Ava.

Lagotis Blatteri O. E. Schulz in Fedde, Rep. XXXI: 161, t. 134 (1933).—Rech. f., l. c. 110.

Gymnandra stolonifera (non C. Koch) Aitch., J. L. S. XVIII: 85.

Distr. Afghanistan, Pakistan.

Leptorhabdos parviflora Benth. in DC., Prodr. X: 510 (1846).—Ivanina in Fl.

URSS XXII: 527 (1955).—Rech. f., l. c. 110.

Leptorhabdos virgata Benth., Scroph. Ind. 48 (1835).—Boiss., F. O. IV: 470 (1879).

Gerardia parviflora Benth., Scroph. Ind. 48 (1835). Jacquem., Voy. Bot. t. 121. Nuristan: Between Pushuki and Kushitaki (Aug. 4, 1955 S. K.).

Distr. Caucasus, Central Asia, Iran, Afghanistan, Dz.-Kashg., W. Himalaya.

Linaria baligaliensis Patzak in Symb. Afgh. IV: 91, Fig. 32. (1959).

Distr. Afghanistan.

Linaria bamianica Patzak, l. c. 92, Fig. 33.

Distr. Afghanistan.

Linaria fastigiata Chav., Monogr. Antirrh. 125, t. 7 (1833).—Patzak, l. c. 90.

Distr. Iran, Afghanistan, Pakistan: Chaman (June 2, 1955 S. K.).

Linaria Griffithii Benth. in DC., Prodr. X: 272 (1846).—Boiss., F. O. IV: 370.—Patzak, l. c. 90.

Distr. Afghanistan.

Linaria kulabensis B. Fedtsch. in Fedde, Rep. X: 380 (1912), Fl. URSS XXII: 205 (1955).—Patzak, l. c. 91.

Distr. Afghanistan, Pam.—Al.

Linaria melanogramma Rech. f., Aell. et Esfand. in Anz. math.-naturw. Kl. Österr. Akad. Wissenschaft 1950: 90.

Distr. Iran, Afghanistan.

Linaria micrantha (Cav.) Hoffmg. et Link subsp. ***teheranica*** Rech. f., in Anz. l. c. 91 (1950).—Patzak, l. c. 90.

Distr. Iran, Afghanistan.

Linaria nuristanica Patzak, l. c. Fig. 36 (1959).

Nuristan: Eschtaway (Aug. 5, 1955 S. K.), Shabul Gul (Aug. 6, 1955 S. K.).

Distr. Afghanistan.

Linaria unaiensis Patzak, l. c. 95, Fig. 34. (1959).

Distr. Afghanistan.

Linaria venosa Lindley in Bot. Reg. 1841, Misc. 70.—Aitch., J. L. S. XVIII: 83.—Patzak, l. c. 94.

Between Sarobi and Kabul (June 18, 1955 S. K.), Kabul, Tomb of Baber (July 14, 1955 S. K.).

Distr. W. Himalaya, Afghanistan.

Linaria veratrifolia Patzak, l. c. 100, Fig. 37 (1959).

Distr. Afghanistan.

Linaria Volkii Patzak, l. c. 96 Fig. 35 (1959).

Distr. Afghanistan.

Mazus japonicus (Thunb.) O. Kuntze, Rev. Gen. Pl. II: 462 (1891).—Goruvkova in Fl. URSS XXII: 316 (1955).

Mazus rugosus Lour., Fl. Cochinch. 385 (1790).—Boiss., F. O. IV : 424.

Distr. Afghanistan, Pamiro-Al., India, Eastern Asia.

Odontites serotina (Lam.) Dum., Fl. Belg. 32 (1872).—Rech. f., l. c. 114.

Distr. Eurasia.

Parentucellia flaviflora (Boiss.) Nevski in Acta Inst. Bot. Acad. Sci. URSS I, IV : 321 (1937), in Fl. URSS XXII : 645, Tab. XXXII-2 (1955).—Rech. f., l. c. 114.

Distr. Eastern Mediterranean Region, Central Asia, Iran, Afghanistan.

Pedicularis bicornuta Klotzsch, Bot. Ergebn. Reise Waldem. 109, t. 61 (1862).—Aitch., J. L. S. XIX : 181.—Rech. f., Symb. Afgh. IV : 115 (1959).

Distr. Afghanistan (Kuram), Pakistan : Karakoram, up to Skoro La 4200 m (July 26, 1955 S. Nakao), W. Himalaya.

Pedicularis cabulica Benth. in DC., Prodr. X : 575 (1846).—Rech. f., l. c. 115.

Distr. Afghanistan.

Pedicularis caeruleo-albescens Wendelbo in Nytt Mag. Bot. I : 57, Fig. 19 (1952). **Fig. 24.**

Nuristan : Chatrass (Aug. 2, 1955 S. K.), between Kushimaicot and Pushuki (Aug. 3, 1955 S. K.).

Distr. Afghanistan (E), Pakistan.

Pedicularis dolichorhiza Schrenk in Bull. Phys.-Math. Acad. Pétersb. I : 80 (1842).—Rech. f., l. c. 115.

Distr. Afghanistan, Kashmir, Central Asia.

Pedicularis gracilis Wall. ex Benth., Scroph. Ind. 52 (1835).—Aitch., J. L. S. XVIII : 84.—Prain in Ann. Bot. Gard. Calcutta III, 1 : 137, pl. 19 (1891).

Distr. Pakistan (Kuram), Himalaya : from Kashmir to Sikkim.

Pedicularis kashmiriana Pennell in Acad. Nat. Sci. Phil. Monogr. V : 147 (1943).—Rech. f., Symb. Afgh. IV : 115 (1959).

Pedicularis pectinata (non Wall.) Aitch., J. L. S. XVIII : 84.

Distr. Afghanistan, Pakistan, W. Himalaya.

Pedicularis punctata Decaisne in Jacquem., Voy. Bot. 117, pl. 122 (1844).—Pennell in Monogr. Acad. Sci. Philadelphia V : 154 (1943).—Rech. f., l. c. 115.

Pedicularis Hookeriana Aitch. (non Wall.), J. L. S. XVIII : 84.

Pedicularis labellata Boiss. (non Jacquem.), F. O. IV : 489.

Nuristan : Between Chatrass and Kushimaicot (Aug. 2, 1955 S. K.).

Distr. Afghanistan (E), W. Himalaya.

Pedicularis pycnantha Boiss., Diag. Ser. I, XII : 45 (1853), F. O. V : 484.—Prain in Ann. Bot. Gard. Calcutta III, 1 : 179, pl. 28, β (1891).—Vved. in Fl. URSS XXII : 719 (1955).—Rech. f., l. c. 116.

Distr. Iran, Gorn.-Turkm., Afghanistan (Kuram), Pakistan.

subsp. **Semenowii** (Regel) Prain in Journ. Asiat. Soc. Beng. LVIII, 2 : 264 (1889).—Rech. f., Symb. Afgh. IV : 116.

Pedicularis pycnantha Aitch., J. L. S. XIX : 85.

Distr. Central Asia, Afghanistan.

Pedicularis pyramidata Royle ex Benth., Scroph. Ind. 52 (1835).—Prain, l. c. 132, pl. 24 (1891).

Pedicularis tenuirostris Aitch. (non Wall.), J. L. S. XVIII : 84.

Distr. Afghanistan (E), Pakistan, W. Himalaya.

Pedicularis rhinanthoides Schrenk in Fischer et Mey., Enum. Pl. Nov. I : 22 (1841).—Prain in Ann. Bot. Gard. Calcutta III, 1 : 109, Tab. 1, f. β (1891).—Vved. in Fl. URSS XXII : 700 (1955).—Rech. f., l. c. 116 (subsp. *rotunda* Vved.).

Pedicularis Elephas Boiss., F. O. IV : 489 quoad pl. Afgh.

Distr. Central Asia, Afghanistan, Himalayas, Mongolia.

Schweinfurthia papilionacea (Burm. f.) Boiss., F. O. IV : 387.

Schweinfurthia sphaerocarpa A. Braun in Monatsb. Akad. Wiss. Berl. 1866 : 875. —Hooker f., F. B. I. IV : 252.

Distr. Afghanistan, Pakistan.

Scrophularia alata Gilib., Fl. lith. I : 127 (1781).—Boiss., F. O. IV : 399.—Aitch., T. L. S. n. III : 93.—Stiefelhagen in Engler, Bot. Jahrb. XLIV : 467 (1910).

Nuristan : Chatrass (Aug. 2, 1955 S. K.)—caulis 90 cm altus.

Distr. Europe, Caucasus, Asia Minor, Iran, Afghanistan, Central Asia, Siberia.

Scrophularia cabulica Benth. in DC., Prodr. X : 316 (1846).—Boiss., F. O. IV : 420.—Aitch., J. L. S. XVIII : 83, T. L. S. n. III : 93.—Rech. f., l. c. 103.

Distr. Afghanistan.

Scrophularia dentata Royle ex Benth., Scroph. Ind. 19 (1835).—Rech. f., l. c. 103.

Distr. Afghanistan, Pakistan.

Scrophularia Edelbergii Rech. f. l. c. 103, Fig. 39 (1959).

Distr. Afghanistan.

Scrophularia farakulumensis Rech. f. et Koie, l. c. 105, Fig. 40 (1959).

Distr. Afghanistan.

Scrophularia fruticosa Bornm. in Fedde, Rep. VII : 203 (1909).—Rech. f., l. c. 106.

Distr. Iran, Afghanistan.

Scrophularia Griffithii Benth. in DC., Prodr. X : 312 (1846).—Boiss., F. O. IV : 410.—Rech. f., l. c. 106.

Distr. Afghanistan.

Scrophularia Koeiei Rech. f., Symb. Afgh. IV : 101, Fig. 38 (1959).

Distr. Afghanistan.

Scrophularia Koelzii Pennell in Monogr. Acad. Sci. Philadelphia V : 52 (1943).

Distr. Afghanistan (E), Pakistan : Muree, Panjab 2500 m (May 27, 1955 S. Nkaao), W. Himalaya.

Scrophularia petraea Aitch. et Hemsl., J. L. S. XIX: 180 (1882).

Distr. Afghanistan (E).

Scrophularia robusta Pennell, l. c. 46 (1943).—Rech. f., l. c. 103.

Distr. Iran, Afghanistan, Pakistan.

Scrophularia scabiosaefolia Benth. in DC., Prodr. X: 311 (1846).—Boiss., F. O. IV: 412.—Hooker f., F. B. I. IV: 256.—Rech. f., l. c. 106.

Distr. Afghanistan, Pakistan, W. Himalaya.

Scrophularia scoparia Pennell in Monogr. Acad. Sci. Philad. V: 48 (1943).—Rech. f., l. c. 106.

Shibar Pass (July 24, 1955 S. K.), Nuristan: Eschtaway (Aug. 5, 1955 S. K.).

Distr. Afghanistan, N. W. India.

Scrophularia Scopolii Hoppe ex Pers., Syn. II: 160 (1807).—Hooker f., F. B. I. IV: 254.—Aitch., J. L. S. XIX: 180.—Gorsh. in Fl. URSS XXII: 259 (1955).—Reich., Ic. XX: t. 1675 III.

Distr. Europe, Caucasus, Iran, Afghanistan, Pakistan, Himalaya: Kashmir.

Scrophularia striata Boiss., F. O. IV: 413.—Rech. f., l. c. 106 (1959).

Distr. Iran, Afghanistan, Pakistan.

Scrophularia Volkii Rech. f., l. c. 107, Fig. 41 (1959).

Distr. Afghanistan.

Verbascum Blattaria L., Sp. Pl. 178 (1753).—Murbeck in 'Acta Univ. Lund. XXIX: 560 (1933).—Bornm. in Engler, Bot. Jahrb. LXVI: 237 (1934).—Huber Morath in Symb. Afg. IV: 89 (1959).

Kunduz in a garden (July 7, 1955 S. K.), Kabul, Dal-ul-Aman (July 18, 1955 S. K.).

Distr. Europe, Asia Minor, Iran, Afghanistan (escaped), Central Asia, Siberia.

Verbascum cheiranthifolium Boiss. var. *transcaspicum* Murb. is reported by Rechinger, l. c. 89.

Verbascum erianthum Benth. in DC., Prodr. X: 235 (1846).—Boiss., F. O. IV: 319.—Aitch., J. L. S. XVIII: 83.—Bornm., l. c. 237.—Pennell, l. c.: 40 (1943).—H. Morath, l. c.

Nuristan: Trokikorl (Aug. 1, 1955 S. K.), Shabul Gul (Aug. 6, 1955 S. K.).

Distr. Afghanistan (E), W. Himalaya.

Verbascum Thapsus L., Sp. Pl. 117 (1753).—Aitch., J. L. S. XVIII: 83.—Murbeck in Acta Univ. Lund. XXIX: 120.

Distr. Northern Hemisphere, from Europe to Himalayas and China.

Veronica acinifolia L., Sp. Pl. 2 ed. 19 (1762).—Rech. f., l. c. 107.

Distr. Europe, Asia Minor, Caucasus, Mesopotamia, Iran, Afghanistan.

Veronica anagallis-aquatica L., Sp. Pl. 12 (1753).—Boiss., F. O. IV: 437.—Aitch., J. L. S. XVIII: 84, T. L. S. n. III: 93.

Kalatus-siray (June 16, 1955 S. K.).

Distr. Northern Hemisphere.

Veronica anagalloides Guss., Ic. Pl. Rar. V: t. 3 (1826).—Boiss., F. O. IV: 437.
—Borisova in Fl. URSS XXII: 470, Tab. XXI-1 (1955).

Kandahar (June 7, 1955 S. K.).

Distr. Central and Southern Europe, Egypt, Mesopotamia, Asia Minor, Caucasus, Syria, Iran, Central Asia, Altai, Ussuri, Afghanistan, India.

Veronica arvensis L., Sp. Pl. 13 (1753).—Rech. f., l. c. 108.

Distr. Eurasia, North Africa.

Veronica beccabunga L., Sp. Pl. 12 (1753).—Boiss., F. O. IV: 438.—Aitch., J. L. S. XVIII: 84.

Pulikhumri (July 5, 1955 S. K.), Kandahar, Arghandab (June 7, 1955 S. K.), Nuristan: Shabul Gul (Aug. 6, 1955 S. K.).

Distr. Extends through most of the Palaearctic region of Eurasia.

Veronica beccabungoides Bornm. in Beih. Bot. Zentralbl. XXII: 111 (1907).

Kabul, Chonghol (July 22, 1955 S. K.), between Siyagird and Charikar (July 11, 1955 S. K.).

Distr. Iran, Afghanistan.

Veronica biloba L., Mant. II: 172 (1771).—Boiss., F. O. IV: 464.—Aitch., J. L. S. XVIII: 84, T. L. S. n. III: 93.—Römpf. in Fedde, Rep. Beih. L: 80 (1928).
—Borisova in Fl. URSS XXII: 392, Tab. XVI-5 (1955).—Rech. f., l. c. 108.

Distr. Balkan-Asia Minor, Caucasus, Altai, Central Asia, Iran, Afghanistan, Himalayas.

Veronica Bornmülleri Haussk. in Mitth. Bot. Ver. Thüring. IX: 20 (1891).
—Borisova in Fl. URSS XXII: 395 (1955).

Veronica bartsiaefolia Boiss., F. O. IV: 464 (1879) pro syn.—Aitch., J. L. S. XVIII: 84 nom. nud.

Distr. Balkan-Asia Minor, Arm.-Kurd., Iran, Afghanistan (Kuram according to Aitch.).

Veronica campylopoda Boiss., Diag. Ser. I, IV: 80 (1844), F. O. IV: 464 cum *β. microtheca* Boiss.—Aitch., J. L. S. XVIII: 84.—Bornm. in Engler, Bot. Jahrb. LXVI: 237 (1934).—Rech. f., l. c. 108.

Shibar Pass (June 24, 1955 S. K.).

Distr. Asia Minor, Syria, Mesopotamia, Afghanistan, Pakistan, Himalayas.

Veronica cardiocarpa (Kar. et Kir.) Walp., Rep. III: 355 (1844-5).—Römpf, l. c. 81 (1928).—Borisova, l. c. 404, tab. XVI-2 (1955).—Rech. f., l. c. 108.

Veronica Griffithii Benth. in DC., Prodr. X: 485 (1846).—Boiss., F. O. IV: 468.

Distr. Central Asia (common), Iran, Afghanistan, Dz.-Kashg., Himalayas.

Veronica deltigera Wall. ex Benth., Scroph. Ind. 45 (1835).—Hooker f., F. B. I. IV: 292.—Römpf, l. c. 24 (1928).

Veronica lanosa Benth., l. c.—Rech. f., l. c. 107.

Veronica rupestris Aitch. et Hemsl., J. L. S. XIX : 180, t. 25 (1882).

Distr. Afghanistan (E), Himalaya : from Kashmir to Nepal.

Veronica didyma Tenore, Fl. Napol. Prodr. VI (1811).—Boiss., F. O. IV : 466.
—Rech. f., l. c. 108.

Doab (July 11, 1955 S. K.).

Distr. Europe, North Africa, Asia Minor, Caucasus, Central Asia, Iran, Afghanistan, Himalayas, Tibet, Mongolia.

Veronica macropoda Boiss., Diag. Ser. I, IV : (1844).—Rech. f., l. c. 110.

Distr. Iran, Afghanistan.

Veronica oxycarpa Boiss., Diagn. Ser. I, VII : 44 (1846), F. O. IV : 438.

Lataband (June 15, 1955 S. K.), Taiwara (Sept. 8, 1955 T. Umesao).

Distr. Asia Minor, Syria, Iran, Afghanistan, Himalayas.

Veronica perpusilla Boiss., Diag. Ser. I, VII : 43 (1846).—Rech. f., l. c. 110.

Distr. Iran, Afghanistan.

Veronica persica Poir., Dict. Ency. Méth. VIII : 542 (1808).—Borisova in Fl. URSS XXII : 411.—Rech. f., l. c. 110.

Veronica Tournefortii C. Gmelin, Fl. Bad. I : 39 (1805).—Römpf, l. c. 85 (1928).—Bornm. in Engler, Bot. Jahrb. LXVI : 237 (1934).

Veronica Buxbaumii Tenore, Fl. Nap. I : 1, t. 1 (1811).—Boiss., F. O. IV : 465.

Distr. Europe, North Africa, Asia Minor, Syria, Caucasus, Iran, Afghanistan, Pakistan, Central Asia, Himalayas.

Veronica verna L., Sp. Pl. 14 (1753).—Boiss., F. O. IV : 456.—Borisova in Fl. URSS IV : 421, Tab. XVIII-5 (1955).

Distr. Europe, Caucasus, W. Siberia, Central Asia, Asia Minor, Iran, Afghanistan, W. Himalaya.

Wulfenia Amherstiana Benth., Scroph. Ind. 46 (1835).—Hooker f., F. B. I. IV : 291.—Aitch., J. L. S. XVIII : 83.

Distr. Pakistan (Kuram), W. Himalaya : from Kashmir to Kumaon.

Pedaliaceae

Sesamum indicum L., Sp. Pl. 634 (1853).—Boiss., F. O. IV : 81.—Aitch., T. L. S. n. III : 95.—Clarke, F. B. I. IV : 387.—Hiltebrand in Bull. Appl. Bot. Gen. Ser. 9, II : 3 (1932).—Nakai in Bull. Tokyo Sci. Mus. no. 22 : 28 (1948).

Mazarisharif (Aug. 21, 1955 S. K.).

Distr. Cultivated plant. Said to be a native of Tropical Africa. The name in Mazarisharif is Kujed. Aitchison reported the native name as Kunjid. Ovary 4-celled. Flowers 3.3 cm long. The Japanese cultivated plant *S. indicum* var. *japonicum* Hiltebrand is not so distinct as Nakai suggested.

Orobanchaceae

Cistanche laxiflora Aitch. et Hemsl. in T. L. S. n. III : 94, pl. XL (1888).

Distr. Afghanistan (W).

Cistanche Ridgewayana Aitch. et Hemsl., l. c. 93, Pl. 39 (1888).—Novop. et Tsvet. in Fl. URSS XXIII: 27, Tab. III-4 (1958).

Distr. Afghanistan (W), Kara-Kum., Pam.-Al.

Orobanche aegyptica Pers., Syn. II: 181 (1807).—Aitch., T. L. S. n. III: 94. —Novop. et Tsvet. in Fl. URSS XXIII: 60, Tab. IV-5 (1958).

Phelipaea aegyptiaca Walp., Rep. III: 463 (1844-5).—Boiss., F. O. IV: 499. —Aitch., J. L. S. XVIII: 85.

Nuristan: Between Seprigal and Voma (July 29, 1955 S. K.).

Distr. North Africa, Europe, Caucasus, Asia Minor, Iran, Central Asia, Afghanistan, Himalayas, Dz.-Kashg.

Orobanche alba Steph. in Willd., Sp. Pl. III: 350 (1800).—Novop. et Tsvet. in Fl. URSS XXIII: 93, Tab. V-8 (1958).

Orobanche Epithymum DC., Fl. Fr. III: 490 (1815).—Boiss., F. O. IV: 509 (1879).—Aitch., J. L. S. XIX: 181.—Hooker f., F. B. I. IV: 325. Reich., Ic. Fl. Germ. XX: t. 1784 (1862).

Between Sarobi and Kabul (June 18, 1955 S. K.).

Distr. Europe, W. and Central Asia, Himalaya: from Kashmir to Kumaon.

Orobanche cernua Loeffl., It. Hisp. 152 (1758).—Boiss., F. O. IV: 514.—Hooker f., F. B. I. IV: 325.—Hegi, III. Fl. VI₁: 140 (1918).—Novop. et Tsvet. in Fl. URSS XXIII: 79 (1958).

Doab (July 10, 1955 S. K.).

Distr. Europe, North Africa, Asia Minor, Caucasus, Iran, Afghanistan, Turkestan, Pakistan, Himalaya: from Kashmir to Nepal, India, Tibet, Mongol.

Orobanche Stocksii Boiss., F. O. IV: 505.—Aitch., T. L. S. n. III: 94.

Distr. Afghanistan.

Acanthaceae

Dicliptera Roxburghiana Nees in Wall., Pl. As. Rar. III: 111.

var. **bupleuroides** (Nees) Clarke, F. B. I. IV: 554 (1885).

Dicliptera Roxburghiana Nees sensu Boiss., F. O. IV: 526.—Aitch., J. L. S. XIX: 182.

Distr. Pakistan (Kuram), India, Himalaya: from Kashmir to Assam and the Chittagong Hills.

Hygrophila polysperma Anders. in Journ. Proc. Linn. Soc. IX: 456 (1867). —Boiss., F. O. IV: 519.—Clarke, F. B. I. IV: 406.

Distr. Afghanistan, Pakistan, India.

Justicia quinqueangularis Koen. var. **peploides** Clarke in F. B. I. IV: 537 (1885).

Justicia peploides T. Anders. in J. L. S. IX: 511 (1867).—Boiss., F. O. IV: 525.

—Aitch., J. L. S. XIX : 182.

Distr. Pakistan (Kuram), India, Abyssinia.

Strobilanthus alatus Nees in DC., Prodr. XI : 194 (1847).—Aitch., J. L. S. XVIII : 85.—Clarke, F. B. I. IV : 464.

Distr. Afghanistan, Pakistan, Himalaya : from Kashmir to Kumaon.

Plantaginaceae

Plantago Aitchisonii Pilger in Notiz. Bot. Gart. Berl.-Dahlem IX : 1099 (1927), in Pflanzenreich Heft 102 : 66 (1937).

P. major (non L.) Aitch., J. L. S. XVIII : 66.

Distr. Afghanistan (Kuram).

Plantago amplexicaulis Cav., Icon. et Desr. Pl. Hisp. II : 22, t. 125 (1793).

var. **bauphula** (Edgew.) Pilger in Notiz. Bot. Gart. Mus. Berlin-Dahlem IX : 1102 (1927), in Pflanzenreich Heft 102 : 312 (1937).

P. Bauphula Edgew. in Hook., Jour. Bot. II : 285 (1840).

P. amplexicaulis Cav. sensu Boiss., F. O. IV : 883 p. p.—Hooker f., F. B. I. IV : 706.

Doab on dry rock (July 10, 1955 S. K.), cult. in Kyoto University, seeds from an apothecary of Kandahar (July 25, 1955 S. K.), seeds from an apothecary of Kunduz (July 4, 1955 S. K.).

Distr. Alger, Egypt, Iran, Afghanistan, Pakistan.

Our specimens have not distinct stems. The seeds are used for stomachic. The seeds gathered from wild plants were sold at Kandahar and called Stekempala and in Kunduz called Esferza.

Plantago ciliata Desf., Fl. Atlant. I : 137, t. 39, fig. 3 (1798).

var. **lanata** Boiss., F. O. IV : 887.—Pilger in Pflanzenreich Heft 102 : 358 (1937).

P. ciliata Desf. sensu Hooker f., F. B. I. IV : 727.

Distr. Arabia, Afghanistan, Pakistan.

Plantago Coronopus L., Sp. Pl. 115 (1753).

subsp. **commutata** (Guss.) Pilger in Fedde, Rep. Sp. Nov. XXVIII : 287 (1930), in Pflanzenreich Heft 102 : 142 (1937).

P. Coronopus L. sensu Boiss., F. O. IV : 888.

Distr. Eastern Mediterranean Reg., Afghanistan, Pakistan.

Plantago ecoronopus Pilger in Fedde, Rep. Sp. Nov. XXXIV : 147 (1933), in Pflanzenreich Heft 102 : 192 (1937).

Plantago maritima L. sensu Aitch., T. L. S. n. III : 100.

Distr. Afghanistan, Iran.

Plantago exigua Murray in Comm. Soc. Reg. Scient. Gott. I, 1778 : 94, T. 51 (1779).—Pilger in Pflanzenreich Heft 102 : 421 (1937).—Kitamura in Fauna and Flora of Nepal Himalaya 229 (1955).

P. pumila L. f., Suppl. 125 (1781).—Willd., Sp. Pl. I: 651 (1798).—Boiss., F. O. IV: 891.—Hooker f., F. B. I. IV: 708.

Distr. Egypt, Afghanistan, Himalayas.

Probably the seeds are used for medicine. The plant is cultivated and not wild in Afghanistan and Himalayas.

Plantago evacina Boiss., F. O. IV: 887.—Pilger in Pflanzenreich Heft 102: 356, Fig. 34-9 in 342 (1937).

Distr. Afghanistan, Iran.

Plantago Griffithii Decne. in DC., Prodr. XIII: 700 (1852).—Boiss., F. O. IV: 880.

P. gentianoides Sibth. et Smith var. *Griffithii* (Decne.) Pilger in Fedde, Rep. XXI: 97 (1925), in Pflanzenreich Heft 102: 309 (1937).

Nuristan: Between Pushuki and Kushitaki (Aug. 4, 1955 S. K.), Shibar Pass (June 24, 1955 S. K.), between Bulola and Doab in swamp (June 25, 1955 S. K.), Doab (June 24, 1955 S. K.).

The inflorescence has always scattered flowers. The writer considers *P. Griffithii* to be specifically distinct from *P. gentianoides*.

Distr. Afghanistan, Iran.

Plantago lachnantha Bunge, Alexandri Lehmann Reliquiae Bot. in Mém. Sav. Étrang. St. Pétersb. VII: 446 (1851).—Boiss., F. O. IV: 887.—Aitch., T. L. S. n. III: 100.—Pilger in Pflanzenreich Heft 102: 355 (1937).—Grig. in Fl. URSS XXIII: 160 (1958).

Distr. Afghanistan (W), Central Asia: Kyz.-Kum., Kara-Kum., Amu-Dar.

Plantago lanceolata L., Sp. Pl. 113 (1753).—Boiss., F. O. IV: 881.—Aitch., J. L. S. XVIII: 89, T. L. S. n. III: 100.—Hooker f., F. B. I. IV: 706.—Pilger in Pflanzenreich Heft 102: 313.—Grig. in Fl. URSS XXIII: 156 (1958).

var. **lanceolata**.

Nuristan: Between Trokikorl and Chatrass (Aug. 1, 1955 S. K.), Dal-ul-Aman, Kabul (July 8, 1955 S. K.), Doab (July 10, 1955 S. K.), Doab (June 24, 1955 S. K.).

Distr. Eurasia.

var. **mediterranea** (Kerner) Pilger in Pflanzenreich Heft 102: 320 (1937).

Plantago lanceolata β. *altissima* Boiss., F. O. IV: 881 p. p.

Kandahar, Arghandab (June 7, 1955 S. K.), Kandahar (June 6, 1955 S. K.).

Distr. Mediterranean Reg., Afghanistan, Turkestan, Himalaya: Kashmir.

Plantago major L., Sp. Pl. 112 (1753).—Boiss., F. O. IV: 878.—Aitch., T. L. S. n. III: 100.—Hooker f., F. B. I. IV: 705 p. p.—Pilger in Pflanzenreich Heft 102: 41 (1937).—Grig. in Fl. URSS XXIII: 138 (1958).

Kunduz (July 7, 1955 S. K.), Kabul, Dal-ul-Aman (July 18, 1955 S. K.), cultivated in Bot. Gard. of the Kyoto Univ., seeds from an apothecary of Kandahar (Aug. 19,

1955 S. K.).

Distr. Europe, Siberia, Asia Minor, Iran, Afghanistan, Pakistan.

The seeds were sold as medicine. The native name is Bartang.

var. **intermedia** (Gilib.) Decne. f. **minor** Pilger in Pflanzenreich Heft 102: 45 (1937).

P. major β . *minor* Boiss., F. O. IV: 878.

Distr. Europe, Asia Minor, Afghanistan, Pakistan.

Plantago ovata Forsk., Fl. Aegypt.-Arab. 31 (1775).—Boiss., F. O. 885.—Hooker f., F. B. I. IV: 707.—Pilger in Pflanzenreich Heft 102: 347 (1937).—Grig. in Fl. URSS XXIII: 157 (1958).

Distr. Mediterranean Reg., Caucasus, Iran, Gorn.-Turkm., Kara-Kum., Afghanistan, Pakistan.

Plantago Stocksii Boiss. ex Decne. in DC., Prodr. XIII, 1: 720 (1852).—Boiss., F. O. IV: 882.—Hooker f., F. B. I. IV: 706.—Pilger in Pflanzenreich Heft 102: 350 (1937).

Distr. Iran, Afghanistan, Pakistan.

Plantago tatarica Decne. in DC., Prodr. XIII, 1: 696 (1852).

Plantago gentianoides var. *tatarica* (Decne.) Pilger in Pflanzenreich Heft 102: 309 (1937).

P. Griffithii var. *pamirica* Fedtsch., Consp. Fl. Turkes. V: 195 (1913).

Distr. Afghanistan, Pamir, Pakistan, Himalaya: Kashmir.

Rubiaceae

Aitchisonia rosea Hemsl. in J. L. S. XIX: 166, Pl. XIV figs. 1-5 (1882).

Distr. Afghanistan (Kuram).

Asperula aparine M. B., Fl. Taur.-Cauc. I: 102 (1808).—Pobed. in Fl. URSS XXIII: 275 (1958).

Galium rivale (non Griseb.) Ehrendf. in Symb. Afgh. IV: 142.

Distr. Eastern Europe, Caucasus, Iran, Central Asia, Afghanistan.

Asperula glomerata Griseb., Spicil. Fl. Rumel. II: 166 (1844).—Boiss., F. O. III: 28.—Pobed. in Fl. URSS XXIII: 208 (1958).—Ehrendf., l. c. 124.

Crucianella glomerata Bieb., Fl. Tauric. Cauc. I: 107 (1808).—Aitch., J. L. S. XVIII: 66.

subsp. **bracteata** (Boiss.) Ehrendf. in Ann. Naturhist. Mus. Wien LVI: 223 (1948), in Symb. Afghan. IV: 126 (1959).

Distr. Afghanistan (NW), Iran.

subsp. **condensata** Ehrendf., l. c. 125 (1959).

Distr. Anatolia, Iran, Afghanistan.

subsp. **eriantha** (Hausskn.) Ehrendf., l. c. 222 (1948), l. c. 125 (1959).

Distr. Anatoria, Mesopotamia, Iran, Afghanistan.

Asperula humifusa (M. B.) Bess., Pl. Cremen. Suppl. III: 4 (1814).—Boiss., F. O. III: 44.—Pobed. in Fl. URSS XXIII: 276.

Galium humifusum M. B., Fl. Taur.-Cauc. I: 104 (1808).—Ehrendf., l. c. 142.

Asperula pycnantha Boiss., Diag. Ser. I, X: 14 (1849).—Aitch., J. L. S. XVIII: 66.

Asperula humifusa Bieb. *β. pycnantha* Boiss., F. O. III: 45.—Aitch., T. L. S. n. III: 73.

Between Doab and Pulikhumri (June 26, 1955 S. K.), between Mazarisharif and Haibak (July 1, 1955 S. K.).

Distr. Eastern Europe, Caucasus, Syria, Asia Minor, Arm.-Kurd., Iran, Central Asia, Afghanistan.

Asperula odorata L., Sp. Pl. 103 (1753).—Boiss., F. O. III: 43.—Aitch., J. L. S. XVIII: 66.—Pobed. in Fl. URSS XXIII: 217 (1958).

Distr. Europe, North Africa, Asia Minor, Iran, Afghanistan (Kuram).

Asperula oppositifolia Regel et Schmalh., Pl. Nov. Fedchenko 42 (1881).—Schischkin, l. c. XXIII: 279, Tab. XV-1 (1958).—Ehrendf., l. c. 132.

subsp. ***albiflora*** M. Pop. in Sched. ad Fl. Asiat. Med. Exs. Fasc. X, No. 250 (1926).—Ehrendf., l. c. 132.

Nuristan: Between Voma and Chatrass (Aug. 1, 1955 S. K.).

Distr. Central Asia, Afghanistan.

subsp. ***cabulica*** Ehrendf., l. c. 132, Fig. 52.

Distr. Afghanistan.

subsp. ***grandiflora*** Ehrendf., l. c. 131, Fig. 50 (1959).

Nuristan: Between Voma and Chatrass (Aug. 1, 1955 S. K.).

Distr. Afghanistan.

subsp. ***pseudo-cynanchia*** Ehrendf., l. c. 132, Fig. 49 d, 51.

Asperula cynanchia (non L.) Aitch., J. L. S. XVIII: 66.

Distr. Afghanistan (Kuram, Nuristan), W. Himalaya.

Asperula setosa Jaub. et Spach, Ill. Pl. Or. II: 152 (1842-3).—Schischkin, l. c. 282.—Ehrendf., l. c. 133.

Asperula arvensis (non L.) Aitch., T. L. S. n. III: 73.

Distr. Mediterranean Region, Caucasus, Iran, Central Asia, Afghanistan.

Callipeltis cucullaris (Jusl.) Bothm. in Fedde, Rep. L: 72 (1941).—Schischkin in Fl. URSS XXIII: 418, Tab. XV-3 (1958).—Ehrendf., l. c. 144.

Callipeltis cucullaria Stev. in Mém. Soc. Nat. Mosc. VII: 275 (1829).—DC., Prodr. IV: 613 (1830).—Boiss., F. O. III: 84.—Aitch., J. L. S. XVIII: 65, T. L. S. n. III: 73.

Lataband, Mullaomur (June 15, 1955 S. K.), between Bulola and Doab (June 25, 1955 S. K.).

Distr. Spain, North Africa, Asia Minor, Syria, Caucasus, Iran, Afghanistan,

Pakistan, Central Asia.

Crucianella exasperata Fisch. et Mey., Index IV Sem. Horti Petrop. VIII (1837).—Lincz. in Fl. URSS XXIII: 185, Tab. X-3 (1958).—Ehrendf., l. c. 124.

Distr. Asia Minor, Arm.-Kurd., Caucasus, Central Asia, Afghanistan.

Crucianella filifolia Regel et Winkl. u. Regelia in Izv. Obshch. liubit. estestvozn. antrop. i etngr. XXXIV, 2: 42 (1882).—Aitch., T. L. S. n. III: 74.—Lincz. in Fl. URSS XXIII: 183, Tab. IX-5 (1958).—Ehrendf., l. c. 123.

Distr. Central Asia, Afghanistan (W).

Crucianella gilanica Trin. in Mém. Acad. Pétersb. VI: 493 (1818).—Lincz. in Fl. URSS XXIII: 189 (1958).

Crucianella glauca Rich. in Mém. Soc. Hist. Nat. Paris V: 131 (1834).—Boiss., F. O. III: 24.—Aitch., T. L. S. n. III: 74.

C. glauca subsp. *transcaspica* Ehrendf. in Ann. Naturhist. Mus. Wien LVI: 218 (1948), l. c. p. 122 (1959).

Distr. Caucasus, Asia Minor, Arm.-Kurd., Central Asia, Mesopotamia, Iran, Afghanistan (W).

Gaillonia afghanica Ehrendorfer in Symb. Afgh. IV: 122, Fig. 47 (1959).

Distr. Afghanistan.

Gaillonia Aucheri Jaub. et Spach in Ann. Sc. Nat. Sér. II, XX: 87 (1843).—Boiss., F. O. III: 16.

Distr. Iran, Arabia, Afghanistan, Pakistan.

Gaillonia Burguieri A. Rich. in Mém. Soc. Hist. Nat. Par. V: 153 (1834).—Jaub. et Spach, l. c. t. 77.—Ehrendf., l. c. 117.

Gaillonia Olivierii (non A. Rich.) Aitch., T. L. S. n. III: 72.

Distr. Iran, Afghanistan.

Gaillonia dubia Aitch. et Hemsl., T. L. S. n. III: 73, Pl. XXX (1888).—Ehrendf., l. c. 122.

Distr. Afghanistan (W), Iran (E).

Gaillonia hymenostephana Jaub. et Spach, Ill. Pl. Or. I: 146, t. 79 (1842-43).—Boiss., F. O. III: 15 (1875).—Aitch., J. L. S. XIX: 167.

Distr. Arabia, Pakistan.

In Afghanistan not yet found.

Gaillonia Kerstani Ehrendf., l. c. 117, Fig. 44 (1959).

Distr. Afghanistan (Nuristan).

Gaillonia macrantha Blatt. et Halb. in Journ. Ind. Bot. I: 170 (1920).—Ehrendorf., l. c. 120, Fig. 46 (1959).

Lataband, Mullaomur (June 15, 1955 S. K.).

Distr. Iran, Afghanistan, Pakistan: Chaman Pass 2100 m (May 31, 1955 S.K.).

Galium afghanicum Ehrendf., l. c. 142, Fig. 56 (1959).

Distr. Afghanistan.

Galium Aparine L., Sp. Pl. 108 (1753).—Boiss., F. O. III: 69.—Aitch., T. L. S. n. III: 73.—Pobed. in Fl. URSS XXIII: 306.—Ehrendf., l. c. 143.

Distr. Europe, North Africa, Asia Minor, Iran, Afghanistan, Siberia, Pakistan.

Galium asperuloides Edgew. in T. L. S. XX: 61 (1846.)—Hand.-Mzt., Symb. Sin. 1027 (1936).—Kitamura in Fauna and Flora of Nepal Himalaya 230 (1955).—Ehrendorf., l. c. 140.

G. triflorum Hooker f. (non Michaux), F. B. I. III: 205.

Asperula consanguinea Klotzsch in Pr. Wald. Reise Bot. 87 t. 74 (1862).

Nuristan: Chatrass (Aug. 2, 1955 S. K.).

Distr. Afghanistan (Nuristan), Himalayas, China.

Leaves sessile 5–6 in a whorl, 3–4.5 cm long 7–10 mm wide, margin scabrid, penninerved. Cymes terminal. Fruits covered with white hooked hairs 2 mm in diameter (excluding hairs).

Galium boreale L., Sp. Pl. 108 (1753).—Boiss., F. O. III: 48.—Hooker f., F. B. I. III: 205.—Pobed. in Fl. URSS XXIII: 349 (1958).—Ehrendf., l. c. 140.

Nuristan: Between Kushimaicot and Pushuki (Aug. 3, 1955 S. K.).

Distr. Europe, Asia Minor, Caucasus, Siberia, Afghanistan, Himalaya: Kashmir, Korea, Hokkaido, Kuriles, Saghalien, Kamtschatka, North America.

Galium ceratopodium Boiss., Diag. Ser. I, III: 45 (1843), F. O. III: 68.—Ehrendf., l. c. 148.

Distr. Arabia, Mesopotamia, Iran, Afghanistan.

Galium Decaisnei Boiss., Diag. Ser. I, VI: 69 (1845).—Pobed. in Fl. URSS XXIII: 311 (1958).

Galium setaceum Lam. subsp. *Decaisnei* (Boiss.) Ehrendf., l. c. 144.

Distr. Syria, Caucasus, Asia Minor, Mesopotamia, Central Asia, Iran, Afghanistan.

Galium ghilanicum Stapf in Denkschr. Acad. Wien I: 53 (1885).—Ehrendf., l. c. 144.

Distr. Iran, Afghanistan.

Galium ibicinum Boiss. et Hausskn., F. O. III: 70.—Ehrendf., l. c. 143.

Distr. Iran, Afghanistan, Pakistan.

Galium Mollugo L. subsp. *asperifolium* (Wall.) Kitamura in Fauna and Flora of Nepal Himalaya: 230 (1955).

G. asperifolium Wall. in Roxb., Fl. Ind. ed. Wall. I: 381 (1820).—Aitch., J. L. S. XVIII: 65.—Hand.-Mzt., Symb. Sin.: 1027 (1936).

G. Mollugo sensu Hooker f., F. B. I. III: 207.—Aitch., J. L. S. XIX: 167.

Distr. Afghanistan (Kuram), Himalayas, China: Yunnan, Szechuan, Kuichau.

Galium spurium L., Sp. Pl. 106 (1753).—Boiss., F. O. III: 69.—Hooker f., F. B. I. III: 208.—Bornm. in Engler, Bot. Jahrb. LXVI: 231 (1934).—Pobed. in Fl. URSS XXIII: 306 (1958).—Ehrendf., l. c. 143.

Sarobi (June 15, 1955 S. K.)—fruits green-white, Shishigar (June 11, 1955 S. K.).

Distr. Europe, North and Central Africa, Asia Minor, Caucasus, Siberia, Iran, Afghanistan, Himalaya : Kashmir.

var. **echinospermum** (Wallr.) Hayek, Fl. Steierm. II : 393 (1912).—Hara in Tokyo Bot. Mag. LI : 838 (1937).

G. spurium β. *Vaillanti* (DC.), Gr. et Godr., Fl. Fr. II : 44 (1850).—Boiss., F. O. III : 69.

Nuristan : Chatrass (Aug. 2, 1955 S. K.).

Distr. Eurasiatic, from Europe to Japan.

Galium tricornae With., Bot. Arr. Brit. Pl. ed. II, I : 153.—Boiss., F. O. III : 67.—Hooker f., F. B. I. III : 207.—Aitch., J. L. S. XIX : 167 (1882), T. L. S. n. III : 73.—Pobed. in Fl. URSS XXIII : 304 (1958).—Ehrendf., l. c. 143.

Distr. Europe, North Africa, Asia Minor, Caucasus, Iran, Central Asia, Afghanistan, Pakistan, Western Himalaya.

Galium verum L., Sp. Pl. 107 (1753).—Ehrendf., l. c. 142.

Distr. Eurasia, North Africa, Afghanistan.

Leptunis trichodes (C. Gay) Schischk. in Fl. URSS XXIII : 285, Tab. XV-4 (1958).—Ehrendorf., l. c. 134 (1959).

Distr. Caucasus, Iran, Central Asia, Afghanistan.

Rubia cordifolia L., Mant. 197 (1771).

var. **Munjista** Miquel in Ann. Mus. Ludg.-Bat. III : 111 (1867).—Kitamura in Fauna and Flora of Nepal Himalaya 231 (1955). *Rubia Akane* Nakai.

Rubia cordifolia Hooker f. (non L.), F. B. I. III : 202.—Aitch., J. L. S. XVIII : 65.—Ehrendf., l. c. 137.

Nuristan : Chatrass (Aug. 2, 1955 S. K.).

Distr. Tropical Africa, Afghanistan, India, Himalayas, Indo-China, Java, China, Japan, Korea.

A scandent herb with black fruits.

Rubia florida Boiss., Diag. Ser. I, VI : 70 (1845).—Boiss., F. O. III : 18.—Aitch., T. L. S. n. III : 73.—Pojark. in Fl. URSS XXIII : 415.—Ehrendf., l. c. 138.

Distr. Afghanistan (W), Iran, Gorn.-Turkm.

Rubia gedrosiaca Bornm. in Beih. Bot. Centralbl. LIX B : 297 (1939).—Ehrendf., l. c. 139.

Distr. Afghanistan, Pakistan.

Rubia infundibuliformis Hemsl. et Lace in J. L. S. XXVIII : 324 (1891).—Ehrendf., l. c. 138.

Rubia Kotschyi (non Boiss.) Aitch., J. L. S. XVIII : 65.

R. albicaulis β. *stenophylla* (non Boiss.) Hooker f., F. B. I. III : 204 p. p.

Distr. Afghanistan, Pakistan.

Rubia oppositifolia Griff., Itin. Notes (Posthum. Pap. II) : 356 nom. subnud. (1848).—Ehrendf., l. c. 138 cum descrip. (1959).

Rubia albicaulis β . *stenophylla* Boiss., F. O. III: 191 quoad pl. Griff.

Nuristan: Between Voma and Trokikorl (July 31, 1955 S. K.).

Distr. Afghanistan.

Rubia tibetica Hooker f., F. B. I. III: 204.—Ehrendf., l. c. 139.

Distr. Afghanistan, Pakistan.

Rubia tinctorum L., Sp. Pl. 109 (1753).—Boiss., F. O. III: 17.—Hooker f., F. B. I. III: 203.—Aitch., T. L. S. n. III: 73.—Pojark. in Fl. URSS XXIII: 393 (1958).—Ehrendf., l. c. 140.

Nuristan: Between Voma and Trokikorl (July 31, 1955 S. K.)—wild.

Native name Rodang (according to Aitchison).

Distr. From Spain eastwards to Afghanistan, Central Asia, cultivated in Kashmir.

Caprifoliaceae

Lonicera arborea Boiss. in Bibl. Univ. Genève. Ser. II, I: 409 (1838).—Schneider, Ill. Handb. II: 726 (1912).—Rehder, Manual 2 ed. 870 (1940).

var. **persica** (Jaub. et Spach) Rehder, Syn. Lon. 133 (1903).—Schneider, l. c. 726.—Rehder, l. c. 870.

Lonicera nummularifolia Jaub. et Spach, Ill. Pl. Orient. I: 133, tab. 70 (1842-3).—Aitch., T. L. S. n. III: 72 (1888).—Pojark. in Fl. URSS XXIII: 566 (1958).

Lonicera persica Jaub. et Spach, l. c. 132, tab. 69.

Between Siyagird and Charikar (July 11, 1955 S. K.)—without flower and fruit, Nuristan: Eschtaway (Aug. 5, 1955 S. K.)—with flowers, between Kushitaki and Pronz (Aug. 4, 1955 S. K.)—with young fruits, Chatrass (Aug. 2, 1955 S. K.)—with fruits.

Distr. South east Europe to Afghanistan and Central Asia.

The specimens from Eschtaway: corolla tube slightly gibbose, tube longer than half the limb, bracteoles acute, half as long as the ovary. Leaves 1.5-2.5 cm long. The specimens from Chatrass: the bracteoles round or depressed. Leaves attaining 3 cm long. Var. *persica* is variable. The treatment of Rehder is here supported.

Abundant along Pech River.

Lonicera discolor Lindley in Bot. Reg. XXX: 33 in note (1844), XXXIII pl. 44 (1847).—Hooker f. et Thomson in J. L. S. II: 171 (1858).—Rehder in Rep. Miss. Bot. Gard. XIV: 119 (1903).

L. orientalis var. *discolor* Clarke, F. B. I. III: 15.

Distr. Afghanistan, Kashmir.

Lonicera Griffithii Hooker f. et Thomson II: 173 (1858).—Aitch., J. L. S. XVIII: 64.—Rehder in Sargent, Trees & Shrubs I: 47, pl. 24 (1902), in Rep. Miss. Bot. Gard. XIV: 201 (1903).—Schneider, Ill. Hand. Laubholz. II: 745 (1912).

Distr. Afghanistan.

Lonicera heterophylla Decaisne in Jacquemont, Voy. Bot. IV: 80, pl. 88 (1844).

—Clarke, F. B. I. III: 15.—Rehder in Rep. Miss. Bot. Gard. XIV: 109 (1903).

Distr. Afghanistan (E), Kashmir.

Lonicera japonica Thunb., Fl. Jap. 89 (1784).—Bornm. in Engler, Bot. Jahrb. LXVI: 231 (1934).

Kalatus-siray (June 16, 1955 S. K.)—cultivated.

Distr. Sometimes cultivated. A native of Japan and China, naturalized in North America.

Lonicera microphylla Willd. ex Roemer & Schultes, Syst. Veg. V: 258 (1819).—Ledeb., Ic. Fl. Ross. III: 8, pl. 213 (1831).—Aitch., J. L. S. XVIII: 65.—Rehder in Rep. Miss. Bot. Gard. XIV: 61 (1903), Manual 2 ed. 857 (1940).—Wendelbo in Nytt Mag. Bot. I: 58 (1952).—Pojark. in Fl. URSS XXIII: 482, Tab. XXIV-2 (1958).

Distr. Afghanistan (Kuram), Central Asia, Atai Mts., Karakoram, Himalaya: Kashmir, China: Kausu, Mongolia.

Lonicera Myrtilus Hooker f. et Thom. in J. L. S. II: 168 (1858).—Aitch., J. L. S. XVIII: 65.—Rehder in Rep. Miss. Bot. Gard. XIV: 44 (1903), in Sargent, Trees and Shrubs I: 87, pl. 44 (1903).—Buser in Boiss., F. O. Suppl. 276.

Distr. sp. Afghanistan: Himalaya: from Kashmir to Sikkim, Upper Burma, China: Yunnan, Szechuan.

Lonicera obovata Royle, Ill. Bot. Himal. Mount. 236 (1839) nom. nud.—Hooker f. & Thom., J. L. S. II: 169 (1858).—Clarke, F. B. I. III: 14.—Aitch., J. L. S. XVIII: 65.—Rehder in Rep. Miss. Bot. Gard. XIV: 56 (1903).—Kitamura in Fauna and Flora of Nepal Himalaya 234 (1955).

Distr. Afghanistan (Kuram), Himalaya: from Kashmir to Sikkim.

Lonicera orientalis Lamarck, Encycl. Méth. Bot. I: 731 (1783).

var. **Govaniana** Rehder in Rep. Miss. Bot. Gard. XIV: 119 (1903).

L. Govaniana Wall. ex DC., Prodr. IV: 337 (1830).

L. orientalis Hooker f. et Thomson, J. L. S. II: 170 (1858).—Aitch., J. L. S. XVIII: 65.—Clarke, F. B. I. III: 15.

Distr. var. Afghanistan (Kuram), Himalaya: from Kashmir to Kumaon.

Lonicera purpurascens Walp., Rep. Bot. II: 449 (1843).—Hooker f. et Thom. in J. L. S. II: 169 (1858).—Buser in Boiss., F. O. Suppl. 277 (1888).—Rehder in Rep. l. c. 55 (1903).

L. sericea Royle, Ill. Bot. Him. 236 (1839) nom. nud.—Aitch., J. L. S. XVIII: 65 (1880).

Distr. Afghanistan (Kuram), Himalaya: Kashmir to Sikkim.

Lonicera quinquelocularis Hardw. in As. Res. Soc. Bengal VI: 351 (1799).—Clarke, F. B. I. III: 14.—Aitch., J. L. S. XVIII: 65.—Rehder in Rep. Miss. Bot. Gard. XIV: 142 (1913).—Kitamura in Fauna and Flora of Nepal Himalaya 234 (1955).

Distr. Afghanistan (Kuram), Pakistan, Himalaya: from Kashmir to Bhutan, China: Hupeh.

Lonicera Semenovii Regel in Acta Horti Petrop. V: 608 (1878).—Rehder in Rep. Miss. Bot. Gard. XIV: 92 (1903).—Wendelbo in Nytt Mag. Bot. I: 58 (1952).—Pojark. in Fl. URSS XXIII: 513 (1958).

Lonicera glauca Hooker f. et Thomson in Journ. Linn. Soc. II: 166 (1858), non Hill.—Clarke, F. B. I. III: 11.—Schneider, Ill. Handb. Laubholz. II: 701 (1912).—Aitch., J. L. S. XVIII: 64.

var. **nuristanica** Kitamura var. nov.

Bacca glanduloso-hispida. Cetera ut typo.

Nuristan: Eschtaway (Aug. 5, 1955 S. K.).

Distr. sp. Afghanistan, Turkestan, Himalaya: from Kashmir to Kumaon.

A small copiously branched shrub. Leaves oblong or ovate-oblong 13–19 mm long densely hispid-setose on both surfaces. Bracts 5–6 mm long at the fruiting stage. Fruits red hispid and glandular.

According to Rehder and Schneider, the fruit of *Lonicera Semenovii* is glabrous. In the original description, the hairiness of the fruit was not mentioned.

Lonicera simulatrix Pojark. in Fl. URSS XXIII: 480, 729, Tab. XXIV–1 (1958).

Distr. Central Asia, Iran, Afghanistan, Dz.-Kashg., Tibet.

Lonicera Webbiana Wall. ex DC., Prodr. IV: 336 (1830).—Buser in Boiss., F. O. Suppl. 277 (1888).—Rehder in Sargent, Trees and Shrubs I: 137, pl. 69 (1903), in Rep. Miss. Bot. Gard. XIV: 108 (1903).

L. alpigena Hooker f. et Thomson in J. L. S. II: 171 (1858), non L.—Aitch., J. L. S. XVIII: 108.

Distr. Southeast Europe, Afghanistan (Kuram), Himalaya: from Kashmir to Nepal.

Sambucus Ebulus L., Sp. Pl. 269 (1753).—Boiss., F. O. III: 2 (1875).—Clarke, F. B. I. III: 2.—Pojark. in Fl. URSS XXIII: 427 (1958).

Nuristan: Chatrass (Aug. 2, 1955 S. K.).

Distr. Europe, North Africa, Asia Minor, Iran, Gorn.—Turkm., Afghanistan, Himalaya: Kashmir.

Viburnum cotinifolium Don, Prodr. Fl. Nepal. 141 (1825).—Aitch., J. L. S. XVIII: 64.—Clarke, F. B. I. III: 3.—Schneider, Ill. Hand. II: 659 (1912).—Rehder, Manual 2 ed. 833 (1940).

Nuristan: Between Chatrass and Budigrah (Aug. 2, 1955 S. K.), between Trokikorl and Chatrass (Aug. 1, 1955 S. K.).

Distr. Afghanistan (E), Himalaya: from Kashmir to Bhutan.

Zabelia corymbosa (Regel et Schm.) Makino in Makino IX: 175 (1948).

Abelia corymbosa Regel et Schmal. in Acta Horti Petrop. V: 608 (1878).—Rehder

in Sargent, Pl. Wilson. I: 128 (1911).—Pojark. in Fl. URSS XXIII: 461 (1958).

Distr. Afghanistan (Kuram), Tianshan.

Zabelia triflora (R. Br.) Makino in Makinoa IX: 175 (1948).—Kitamura in Fauna and Flora of Nepal Himalaya 235 (1955).

Abelia triflora R. Br. in Wall., Pl. As. Rar. I: t. 15 (1830).

var. **parvifolia** (Clarke) Kitamura comb. nov.

Abelia triflora R. Br. var. *parvifolia* Clarke in Hooker f., F. B. I. III: 9.—Aitch., J. L. S. XVIII: 64.—Rehder in Sargent, Pl. Wilson. I: 128 (1911).

Distr. sp. Afghanistan (Kuram), Himalaya: from Kashmir to Nepal.

Valerianaceae

Valeriana Jatamansi Jones in As. Res. II: 405, 416 (1790).—Hand.—Mzt. in Acta Horti Goth. IX: 171 (1934), Symb. Sin. 1052 (1936).

Valeriana Wallichiana DC., Prodr. IV: 640 (1830).—Mém. Valer. 15, t. 4 (1832).—Aitch., J. L. S. XVIII: 66 (1880).—C. B. Clarke, F. B. I. III: 213.

Distr. Afghanistan, Himalaya: from Kashmir to Bhutan, Khasia Mts, China: Yunnan, Szechuan, Hupeh, Kuichau.

Valeriana petrophylla Bunge in Ledeb., Fl. Alt. II: 54 (1829), Ic. tab. 19 (1829).—Boiss., F. O. III: 89 (1875).—Aitch., J. L. S. XVIII: 66.—Grubov in Fl. URSS XXIII: 637, Tab. XXX-4 (1958).

Distr. Afghanistan (Kuschuk), Altai.

Valeriana sisymbriifolia Vahl, Enum. II: 7 (1806).—Desf., Choix Thourn. 53, t. 41 (1808).—Boiss., F. O. II: 88.—Aitch., J. L. S. XIX: 167.—Grubov in Fl. URSS XXIII: 617, Tab. XXXI-4 (1958).

Distr. Asia Minor, Caucasus, Iran, Afghanistan.

Valeriana Stracheyi C. B. Clarke, F. B. I. III: 212 (1881).

Nuristan: Between Pushuki and Kushitaki (Aug. 4, 1955 S. K.).

Distr. Afghanistan (Nuristan), Himalaya: from Kashmir to Kumaon.

Valeriana dioica was reported from Kuram by Aitchison in J. L. S. XVIII: 66 (1880). This identification was doubted by Buser in F. O. Suppl. 283 (1888).

Valerianella diodon Boiss., Diag. Ser. I, III: 57 (1843), F. O. III: 99.—Aitch., T. L. S. n. III: 74.—Lincz. in Fl. URSS XXIII: 653, Tab. XXXIII-14 (1958).

Distr. Asia Minor, Caucasus, Mesopotamia, Iran, Central Asia, Afghanistan (W).

Valerianella Dufresnia Bunge ex Boiss., F. O. III: 109.—Aitch., T. L. S. n. III: 74.—Lincz. in Fl. URSS XXIII: 679, Tab. XXXIV-10 (1958).

Distr. Asia Minor, Caucasus, Mesopotamia, Iran, Central Asia, Afghanistan, Pakistan.

Valerianella sclerocarpa Fischer et Mey., Ind. Sem. Horti Petrop. II: 53 (1835).—Boiss., F. O. III: 100.—Aitch., J. L. S. XIX: 167.—Lincz. in Fl. URSS XXIII: 657, Tab. XXXIII-13 (1958).

Distr. Caucasus, Iran, Gorn.-Turkm., Afghanistan (Kuram).

Valerianella Szovitsiana Fischer et Mey., Ind. Sem. Horti Petrop. III: 48 (1836).—Boiss., F. O. III: 101.—C. B. Clarke, F. B. I. III: 214.—Lincz. in Fl. URSS XXIII: 660, Tab. XXXIII-11 (1958).

Distr. Asia Minor, Arabia, Caucasus, Iran, Afghanistan, Central Asia, Kashmir.

Valerianella triplaris Boiss. et Buhse in Nouv. Mém. Soc. Nat. Mosc. XII: 111 (1860).—Boiss., F. O. III: 98.—Lincz. in Fl. URSS XXIII: 652, Tab. XXXIV-17 (1958).

Distr. Iran, Afghanistan, Central Asia.

Dipsaceae

Cephalaria syriaca (L.) Schrad., Cat. Sem. Hort. Götting. (1814).—Boiss., F. O. III: 120.—Aitch., J. L. S. XVIII: 66, XIX: 167, T. L. S. n. III: 74.—Bobr. in Fl. URSS XXIV: 47 (1957).

subsp. **turanica** Bobr. in Tr. po prikl. Bot. XXI: 315 (1918), l. c. 48 (1957).—Rech. f., l. c. 147.

Between Mazarisharif and Haibak (July 1, 1955 S. K.), Kandahar (June 9, 1955 S. K.).

Distr. subsp. Caucasus, Central Asia, Iran, Afghanistan.

Dipsacus azureus Schrenk, Enum. Pl. Nov. I: 53 (1841).—Bobr., l. c. 23, Tab. II-3.—Rech. f., l. c. 147.

Distr. Central Asia, Afghanistan.

Dipsacus laciniatus L., Sp. Pl. 97 (1753).—Rech. f., l. c. 148.

Distr. Europe, Caucasus, Asia Minor, Iran, Central Asia, Afghanistan.

Dipsacus mitis Don, Prodr. Fl. Nep. 161 (1825).—Hand.-Mzt., Symb. Sin. IV: 1058 (1936).—Kitamura in Fauna and Flora of Nepal Himalaya 237 (1955).

D. inermis Wall. var. β . in Roxb., Fl. Ind. ed. Wall. I: 367 (1824).—Clarke, F. B. I. III: 217.—Rech. f., l. c. 148.

Cephalaria cachemirica Decne. in Jacquem., Voy. Bot. 86, t. 94 (1844).

Dipsacus Roylei Klotzsch in Pr. Wald. Reise Bot. 83, t. 84 (1862).

Nuristan: Between Trokikorl and Chatrass (Aug. 1, 1955 S. K.).

Distr. Afghanistan, Himalaya: from Kashmir to Bhutan, China: Yunnan.

As compared with the Nepalese specimens, the Afghan specimen has narrower and longer bracteoles. The heads of the latter are ovato-globose like those of *Cephalaria cachemirica*.

Our Nepalese specimens have depresso-globose heads like those of *Dipsacus Roylei* Klotzsch. Here, the writer treats *D. mitis* in a broad sense.

Morinia Coulteriana Royle, Ill. Him. 245 (1835).—Aitch., J. L. S. XVIII: 66.—Hooker f., F. B. I. III: 216.—Rechinger f., l. c. 147.

Distr. Afghanistan, Kuram, Himalaya: from Kashmir to Garwal.

Morinia persica L., Sp. Pl. 28 (1753).—Boiss., F. O. III: 114.—Aitch., J. L. S. XVIII: 66.—Hooker f., F. B. I. III: 216.—Rech. f., l. c. 147. **Fig. 28.**

M. Wallichiana Royle, Ill. Himal. Mount. 245, t. 55, fig. 1 (1835).—Rech. f., l. c. 147.

Nuristan: Between Kushimaicot and Pushuki (Aug. 3, 1955 S. K.)—flowering stage, between Voma and Chatrass (Aug. 1, 1955 S. K.)—fr.

Distr. Greece, Asia Minor, Iran, Afghanistan, Himalaya: from Kashmir to Kumaon.

Pterocephalus afghanica (Aitch. et Hemsl.) Boiss., F. O. Suppl. 286.—Bobr. in Fl. URSS XXIV: 49 (1957).—Rech. f., l. c. 148.

Scabiosa afghanica Aitch. et Hemsl., J. L. S. XVIII: 67, l. c. XIX, tab. 15.

Distr. Afghanistan (Kuram), Central Asia.

Scabiosa Candollii DC., Prodr. IV: 654 (1830).

Scabiosa Candolliana Wall. ex C. B. Clarke, F. B. I. III: 219.—Aitch., J. L. S. XVIII: 168.—Rech. f., l. c. 148.

Distr. Afghanistan (Kuram), Himalaya: from Murree to Kumaon.

Scabiosa Olivieri Coult., Dips. 30, t. 2, fig. 10 (1823).—Boiss., F. O. III: 141.—Aitch., J. L. S. XVIII: 67, T. L. S. n. III: 74.—C. B. Clarke, F. B. I. III: 219.—Bobr. in Fl. URSS XXIV: 72 (1957).—Rech. f., l. c. 148.

Lataband Pass, Mullaomur (June 15, 1955 S. K.).

Distr. Armenia, Caucasus, Central Asia, Arabia, Iran, Afghanistan, Pakistan: Quetta (May 27, 1955 S. K.), Chaman Pass (May 31, 1955 S. K.), Quila Abdullah (May 28, 1955 S. K.).

Scabiosa rotata Bieb., Fl. Taur. Cauc. III: 102 (1819).—Boiss., F. O. III: 145.—Aitch., T. L. S. n. III: 74.—Bobr. in Fl. URSS XXIV: 71 (1957).—Rech. f., l. c. 148.

Distr. Asia Minor, Caucasus, Central Asia, Iran, Afghanistan.

Scabiosa speciosa Royle, Ill. Him. Mount. 245, t. 55 fig. 2 (1835).—Hooker f., F. B. I. III: 219.

Ashtarlai (July 14, 1954 S. Iwamura).

Distr. Afghanistan, Himalaya: from Kashmir to Garwal.

Our specimen differs from the typical *S. speciosa* by the pinnatisected leaves.

Cucurbitaceae

Bryonia dioica Jacq., Fl. Austr. II: 59 (1773).—Aitch., J. L. S. XVIII: 60.—Cogn. et Harm. in Pflanzenreich Heft 80: 77, fig. 11 (1924).—Vasil. in Fl. URSS XXIV: 104 (1957).

Bryonia dioica β . *subsessilis* Boiss., F. O. II: 760.

Distr. Europe, North Africa, Caucasus, Central Asia to Tianshan, Iran, Afghanistan (Kuram), Pakistan.

Bryonia monoica Aitch. et Hemsl., T. L. S. n. III: 65, t. 10 (1888).—Cogn. et

Harm. in Pflanzenreich Heft 88: 87 (1924).—Vasil. in Fl. URSS XXIV: 104 (1957).

Distr. Afghanistan (W), Gorn.-Turkm.

Citrullus colocynthis (L.) Schrad. in Linnaea XII: 414 (1838).—Boiss., F. O. II: 759.—Clarke, F. B. I. II: 620.—Aitch., T. L. S. n. III: 64.—Cogn. et Harm. in Pflanzenreich Heft 88: 169 (1924).—Vasil. in Fl. URSS XXIV: 113 (1957).

Sarobi, wild (June 18, 1955 S. K.).

Distr. Africa, Spain, Asia Minor, Arabia, Iran, Afghanistan, Kara-Kum., Pakistan, India.

Citrullus vulgaris Schrad. in Eckl. et Zeyher, Enum. Pl. 279 (1836).—Cogn. et Harm. in Pflanzenreich Heft 88: 103 (1924).—Aitch., T. L. S. n. III: 64.—Fosberg in Taxon V: 15 (1956).

Distr. A native of Africa, widely cultivated in the warm regions. In Afghanistan, this is also extensively cultivated. The writer eaten many fruits. The flesh is white or rose, not so sweet as those of Japanese races. The seeds are white, black or reddish brown, and 14–15 mm long, 8–10 mm broad, larger than those of Japanese races. The native name is Tarbuza. According to Aitchison it was called Hindu-ani.

Cucumis sativus L., Sp. Pl. 1012 (1753).—Cogniaux et Harms in Pflanzenreich Heft 88: 143 (1924).—Vasil. in Fl. URSS XXIV: 114 (1957).

Distr. A native of Himalayas, now widely cultivated in the temperate and warm regions of the world.

The writer bought many fruits and seeds in Afghanistan. The fruits without prickles were very strange for his eyes. The Japanese races have usually many prickles on their skin. The Afghan race belongs to Cucumber. The native name is Badrang.

Cucumis callosus Cogn. in Pflanzenreich Heft 88: 129 (1924).

Bryonia callosa Rottl. in Neue Schrift Ges. Nat. Freunde zu Berlin IV: 210 (1803).

Cucumis trigonus Roxb., Hort. Beng. 70 (1814).—Aitch., T. L. S. n. III: 64.—Clarke, F. B. I. II: 619.

Distr. Mesopotamia, Iran, Afghanistan, Pakistan, India, Indo-China, Hainan.

Cucumis Melo L., Sp. Pl. 1011 (1753).—Cogn. et Harm. in Pflanzenreich Heft 88: 120 (1924). **Fig. 15, 16.**

Melo sativus Sageret ex Roem., Fam. II: 72 (1846).—Vasil. in Fl. URSS XXIV: 116 (1957).

Mazarisharif cult. (June 30, 1955 S. K.).

Distr. Said to be a native of Tropical Africa or India. Now widely cultivated in warm regions of the world.

In Afghanistan, melon is widely cultivated. There are many races; the fruits are small and round, oblong about 20 cm long, or very large oblong 30–40 cm long, netted or not, etc. The native name of melon is Karbuza.

The round variety is called *Kharbuza zumburcha*. There was the very long variety, *Cucumis melo* var. **flexuosus** (L.) Naudin in Ann. Sci. Nat. 4 sér. XI: 34 (1859).—Cogniaux et Harms in Pflanzenreich Heft 88: 125 (1924). *M. flexuosus* (L.) Sageret ex Roem., Fam. II: 45 (1846).—Vasil. in Fl. URSS XXIV: 117 (1957).

In Afghanistan *Lagenaria siceraria* Stand. (native name Kodo) is also cultivated.

Luffa acutangula Roxb. (native name Torai) and *Cucurbitas* are also cultivated in Afghanistan.

Melothria heterophylla (Lour.) Cogn. in DC., Monogr. Phan. III: 618 (1881), in Pflanzenreich Heft 66: 121, fig. 28 (1916).

Zehneria umbellata Thwaites, Enum. 125 (1858).—Aitch., J. L. S. XIX: 163.—Clarke, F. B. I. II. 625.

Distr. Pakistan (Kuram), India, Malaya, China, North Australia.

Campanulaceae

Asyneuma Thomsonii Bornm. in Beih. Bot. Centralbl. XXXVIII, II: 348 (1921).

Phyteuma Thomsoni Clarke in Hooker f., F. B. I. III: 438 (1881).

Campanula Thomsoni Hooker f. et Thoms. in J. L. S. II: 25 (1858).

Symphyandra stylosa Royle, Ill. Himal. Mount. 253 (1835) nom. nud.

var. **nuristanica** Kitamura var. nov.

Abs typo foliis hirsutis acute serratis, calycis dentibus brevioribus differt.

Nuristan: Between Pushuki and Kushitaki (Aug. 4, 1955 S. K.).

Distr. sp. Afghanistan, Himalaya: Kashmir.

Recently Dr. Wendelbo published *A. strictum* from Chitral.

Asyneuma Thomsonii var. *nuristanica* has hirsute leaves and the three lobed stigma. This variety connects *A. Thomsonii* with *A. strictum*. The latter may be a variety.

Asyneuma Thomsonii var. *strictum* (Wendelbo) Kitamura stat. nov. *A. strictum* Wendelbo in Nytt Magasin for Botanikk I: 60, Fig. 21 (1952).

Campanula aristata Wall. in Roxb., Fl. Ind. ed. Wall. II: 98 (1824).—Hooker f., F. B. I. III: 441.—Aitch., J. L. S. XIX: 174.—Kitamura in Fauna and Flora of Nepal Himalaya 239 (1955).

Distr. Afghanistan (Kuram), Himalaya: from Kashmir to Sikkim, Tibet.

Campanula Benthamii Wall., Catal. n. 1290.

Campanula canescens Wall. ex A. DC., Prodr. VII: 473 (1839).—non Roth. (1827).—Boiss., F. O. III: 934 (1875).

Distr. Afghanistan, Pakistan, India.

Campanula cashmiriana Royle, Ill. I: 254, t. 62, fig. 1 (1835).—Aitch., J. L. S. XIX: 174.—Wendelbo in Nytt Mag. Bot. I: 62 (1952).

Distr. Afghanistan (Kuram), Pakistan, Kashmir.

var. **evolvulacea** (Royle) Clarke, F. B. I. III: 441 (1881).—Aitch., J. L. S. XIX: 174.

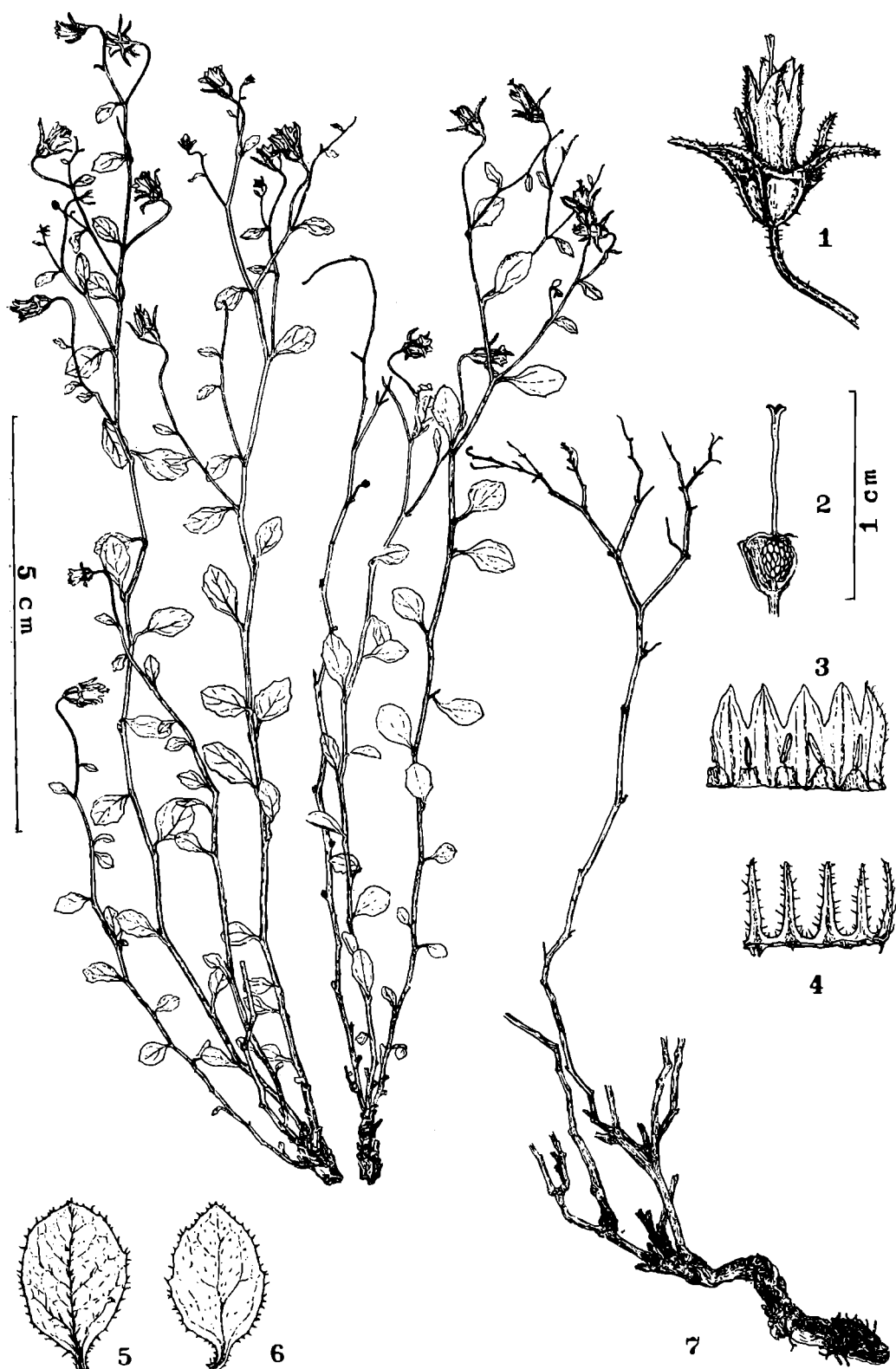


Fig. 91. *Campanula Kiharae* Kitam.: 1 Flower, 2 Pistil, 3 Corolla and Stamens, 4 Calyx-lobe, 5 and 6 Leaves, 7 Stem and Root. (1—6: Nuristan: Between Voma and Chatrass, 7: Nuristan: Between Voma and Trokikorl).

Distr. Afghanistan (Kuram), Himalaya : from Kashmir to Bhutan.

Campanula colorata Wall. in Roxb., Fl. Ind. ed. Wall. II : 101 (1824).—Aitch., J. L. S. XVIII : 74.—Kitamura in Fauna and Flora of Nepal Himalaya 239 (1955).

Campanula ramulosa Wall. in Roxb., Fl. Ind. ed. Wall. II : 101 (1824).—Boiss., F. O. III : 934.

Distr. Afghanistan (Kabul, Kuram), Himalaya : from Kashmir to Khasia, Western Ghats, Indo-China, China : Sikang, Yunnan, Szechuan, Kuichau, Tibet.

Campanula (§ Medium, Triloculares, Exappendiculatae) **Kiharae** Kitamura in Acta Phytotax. Geobot. XVI : 131 (1956). **Fig. 91.**

Perennis rhizomate incrassato. Caulis caespitosus ascendens 12–17 cm altus gracilis 0.4 mm diametro, flexuosus sub lente pilis minutis strigosus, superne ramosus, ramis gracilibus. Folia radicalia sub anthesi emarcida, caulina inferiora et media obovata vel rotundata 6–10 mm longa 3.5–6 mm lata, apice obtusa basi in petiolum alatum brevem cuneata margine parce mucronulata utrinque minute strigosa, textura chartacea. Flores ad apices ramorum terminantes solitalii sub anthesi cernui, pedunculis gracilibus 8–15 mm longis ebracteatis. Corolla 5 mm longa extus minute strigosa, lobis 1 mm longis. Calycis tubus (ovarium) 2.5–3 mm longus, lobis lanceolatis 2–3 mm longis integris, pilis albis patentibus minutis hirsutis. Stylus 5–5.5 mm longus, stigmatibus 3. Anthera 2 mm longa, filamentum 1.5 mm longum basi dilatatum margine villosum. Capsula rotundata. Semina anguste oblonga 0.8 mm longa nitentia.

Nuristan : Between Voma and Chatrass, 1700 m (Aug. 1, 1955 S. K.)—Typus in Herb. Univ. Kyoto, between Voma and Trokikori, 1500 m (Jul. 29, 1955 S. K.).

Distr. Afghanistan.

This is a very small plant with small leaves and flowers. The calyx-lobes are lanceolate and entire. The corolla tubulose. This species grows on rocks along the Pech River. The specific name is dedicated to Prof. Dr. H. Kihara, the leader of our expedition.

Campanula leucoclada Boiss., Diag. Ser. II, III : 109 (1856), F. O. III : 911.

C. Griffithii Hooker f. et Thomson in J. L. S. II : (1858).—Aitch., J. L. S. XVIII : 74.

Lataband, Mullaomur (June 15, 1955 S. K.).

Distr. Afghanistan, Pakistan : Quetta (May 27, S. K.).

Campanula ruderalis Aitch. et Hemsl., J. L. S. XIX : 174 (1882).

Distr. Afghanistan (Kuram).

Campanula (§ Medium, Triloculares, Appendiculatae, Elatae) **striata** Kitamura in Acta Phytotax. Geobot. XVI : 132 (1956). **Fig. 92.**

Species *C. sclerotrichae* affinis a qua foliis lobatocrenatis, calycis lobis latioribus ovato-lanceolatis divergit.

Rhizoma obliquum incrassatum. Caulis erectus 90–130 cm altus robustus, costato-



Fig. 92. *Campanula striata* Kitam.: 1 Ovary, 2 Stigma, 3 Anther, 4 Corolla, 5 Calyx-lobe, 6 Auricle. (Between Siyagird and Charikar).

striatus secus costam setulis rigidis retroflexis scaber, ceterum glaber stramineus, inferne 5–10 mm diametro, supra medium racemosim ramosus, ramis brevibus 5–60 mm longis rigidis. Folia radicalia et caulina inferiora sub anthesi viva, longe petiolata, petiolo 12–16 mm longo angustissime alato sparse retrorsim scabro, lamina cordata apice obtusa 6.5–8.5 cm longa 4.5–7 cm lata margine lobato-crenata utrinque strigosa, textura chartacea, folia caulina media et superiora sursum breviter sed semper distincte petiolata, lamina cordata vel ovato-lanceolata apice obtusa vel acutiuscula basi cordata, truncata vel rotundata margine irregulariter crenata utrinque strigosa. Flores cernui racemosim vel duplicato-racemosim dispositi, pedicellis circ. 5 mm longis. Corolla caerulea 23–25 mm longa, extus secus nervos pilis albis patentibus setosa, lobis 11 mm longis. Calycis tubus (ovarium) turbinatus 5–10 mm longus costatus, secus costam pilis rigidis albis patentibus 1–1.3 mm longis setosus, lobis ovato-lanceolatis 13–15 mm longis apice acuminatis margine et dorso setosis, auriculis 5–6 mm longis. Stylus 18 mm longus, stigmatibus 3. Antherae 9 mm longae, filamenta dilatata 4 mm longa et lata apice truncata. Capsula turbinato-obovata 10 mm longa et lata. Semina compressa elliptica 1.2 mm longa brunnea marginata.

Between Siyagird and Charikar, 1900 m (Jul. 11, 1955 S. K.)—Typus in Herb. Univ. Kyoto.

Distr. Afghanistan.

This is a beautiful Campanula with the angular stem.

Campanula (§ Medium, Triloculares, Exappendiculatae) **trista** Kitamura in Acta Phytotax. Geobot. XVI: 132 (1956).

Perennis. Caulis erectus brunneo-purpurascens gracilis 18–28 cm altus flexuosus, supra medium ramosus, ramis ascendentibus, pilis albis patentibus canescens. Folia radicalia sub anthesi emarcida, caulina inferiora et media obovato-oblonga 18–50 mm longa 8–16 mm lata apice obtusa basi angustata alato-petiolata, margine irregulariter crenata utrinque strigosa, textura tenuia. Folia superiora sursum gradatim minora obovata vel oblonga obtusa. Flores ad apices ramorum solitalii, pedunculis gracilibus 6–15 mm longis ebracteatis post anthesin cernui. Corolla parva caerulea 3 mm longa extus strigosa, lobis 5, 1 mm longis. Calycis tubus (ovarium) sub anthesi 3 mm longus post anthesin 4–6 mm longus, pilis albis hirsutus, lobis triangularibus sub anthesi 3 mm longis post anthesin 3.5–5 mm longis integris hirsutis. Stylus 2 mm longus, stigmatibus 3. Stamina 3 mm longa, filamenta basi dilatata margine pilosa, antherae 2 mm longae. Semina ellipsoidea 0.5 mm longa nitentia.

Nuristan: Between Voma and Trokikorl, 1500 m (July 31, 1955 S. K. post anthesin)—Typus in Herb. Univ. Kyoto, cultivated in Kyoto, seeds from the type specimen (July 11, 1956 S. K.).

This species is characterized by its small corolla, only 3 mm long. This is easily cultivated in Kyoto. Sown in March in the green house, flowered in early July.

Distr. Afghanistan.

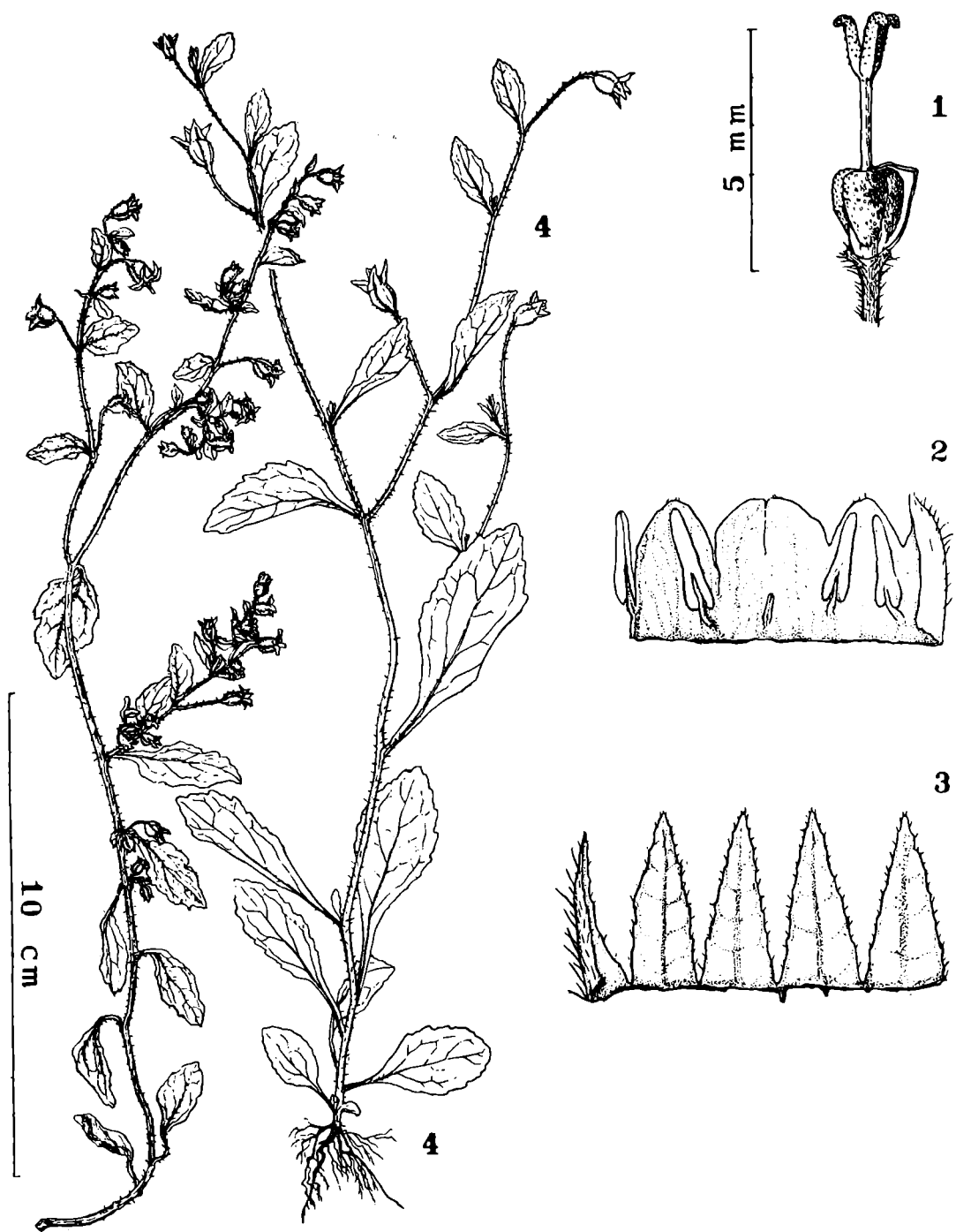


Fig. 93. *Campanula trista* Kitam.: 1 Pistil, 2 Corolla and Stamens, 3 Calyx-lobes, 4 Cultivated from (Left figure: Nuristan: Between Voma and Trokikorl).

Codonopsis clematidea (Schrenck) C. B. Clarke in Hooker f., F. B. I. III: 433 (1881).—Komarov in Acta Horti Petrop. XXIX: 115 (1908).—Anthony in Notes Bot. Gard. Edinb. XV: 187 (1926).—Nannf. in Acta Horti Göth. V: 28 (1930).—Fed. in Fl. URSS XXIV: 437, Tab XXVI, fig. 3 (1957).

Wahlenbergia clematidea Schrenck, Enum. Pl. Nov. Songar. I: 38 (1841).

Codonopsis ovata C. B. Clarke in F. B. I. III: 433 (1881) pro parte.—Aitch., J. L. S. XVIII: 74 (1880) p. p.

Codonopsis ovata var. *cuspidata* Chipp. in Journ. Linn. Soc. XXXVIII: 385 (1908). var. **obtusa** (Chipp.) Kitamura comb. nov.

Codonopsis ovata var. *obtusa* Chipp., l. c. 385 (1908).

Codonopsis obtusa (Chipp.) Nannf. in Acta Horti Göth. V: 28 (1930).

Nuristan: Between Voma and Trokikorl (July 31, 1955 S. K.).

Distr. Afghanistan, Turkestan.

This variety is very beautiful and grows abundantly along the Pech River in shady places. The stem is procumbent attaining about 1 m long, with numerous branches. The flower-tube is broad. Corolla lobes shortly cuspidate and ciliate at the apex. The ovary half-inferior. The lobes of calyx are usually separated by sinus. Leaves ovate distinctly petiolated, and densely pilose on both sides.

Compositae

Acanthocephalus Benthamianus Regel & Schmalh. in Regel, Pl. Nov. Fedtsch. 47 (1882).—Nevski in Fl. et Syst. IV: 292 (1937).—Rech. f., Symb. Afgh. II: 186. Distr. Central Asia, Afghanistan (Nuristan).

Achillea filipendulina Lam., Encycl. I: 27 (1783).—Rech. f., Symb. Afgh. II: 42. Nuristan: Between Trokikorl and Chatrass (Aug. 1955 S. K.).

Distr. Caucasus, Armenia, Kurdistan, Iran, Afghanistan (NE).

Achillea micrantha Willd., Sp. Pl. III: 2209 (1803).—M. B., Fl. Taur. Cauc. II: 336 (1808).—Boiss., F. O. III: 264.—Aitch., J. L. S. XIX: 169.—Bornmüller in Engler, Bot. Jahrb. LXVI: 232 (1934).—Rech. f., Symb. Afgh. II: 42 (1955).

Near Kabul (June 11, 1955 S. K.), Doab (June 24, S. K.), between Mazarisharif and Haibak (July 1, S. K.).

Distr. Asia Minor, Iran, Afghanistan, Caucasus, Syria, Mesopotamia, Armenia.

Achillea Millefolium L., Sp. Pl. 699 (1753).—Rech. f., Symb. Afgh. II: 42. Distr. Europe, Siberia, Am. bor. (naturalized), Himalayas, Afghanistan.

Achillea Santolina L., Sp. Pl. 896 (1753).—Boiss., F. O. III: 266.—Aitch., J. L. S. XIX: 169.—Rech. f., Symb. Afgh. II: 42 (1955).

A. leptophylla (non Bieb.) Aitch., J. L. S. XVIII: 69.

Kandahar in wheat field (June 6, 1955).

Distr. Asia Minor, Armenia, Transcaucasia, Iran: Khoy-Tabriz (July 29, 1955

H. Kihara), Mesopotamia, Syria, Arabia, Afr. bor., Afghanistan, Pakistan: Quetta (May 25, 1955 S. K.), Chaman Pass (May 31, 1955 S. K.), Chaman (May 31, 1955).

A weed of roadsides near Quetta.

Achillea vermicularis Trin. in Mém. Acad. Pétersb. VI: 494, t. 13 (1818).—Rech. f., Symb. Afgh. II: 43 (1955).

Distr. Armenia, Kurdistan, Iran, Afghanistan.

Acroptilon repens (L.) DC., Prodr. VI: 663 (1838).—Nevski in Fl. et Syst. IV: 290 (1937).—Rechinger f., Symb. Afgh. II: 181 (1955).

Centaurea repens L., Sp. Pl. 2 ed. 1293 (1763).—Hoffm. in O. Paulsen, Pl. Olufsen's Pamir Eped. 157 (1903).

Acroptilon Picris DC., l. c. 662.—Boiss., F. O. III: 612.

Centaurea Picris Pallas, Tabl. Taur. 58.—Willd., Sp. Pl. III: 2302 (1803).—Aitch., J. L. S. XVIII: 72, T. L. S. n. III: 81.

Charikar (June 23, 1955 S. K.), Mazarisharif (June 30, 1955 S. K.), Kabul (July 18, 1955 S. K.).

Distr. Asia Minor, Middle and Southern Russia, Caucasus, Mesopotamia, Iran: Between Damagan and Teheran (July 12, 1955 K. Yamashita), Tabriz (July 28, 1955 K. Yamashita), Afghanistan, Turksetan, Ural, Altai, Pakistan: Chaman (June 2, 1955 S. K.), Quetta (May 25, 1955 S. K.), Quilla Abudullah (May 28, 1955 S. K.), Mongolia.

This species is widely distributed and common in Central Asia.

Amberboa moschata Less., Syn. Comp. 8 (1832).—Boiss., F. O. III: 605.—Rech. f., Symb. Afgh. II: 181 (1955).

Centaurea moschata L., Sp. Pl. 909 (1753).—Aitch., T. L. S. n. III: 81.

Between Pulikhumri and Haibak (June 27, 1955 S. K.).

Distr. Transcaucasia, Armenia, Iran, Afghanistan, Turkestan.

A very beautiful plant growing on open hill sides. Flower yellow. The achenes are not so distinctly rugose transversally.

Anaphalis contorta Hooker f., F. B. I. III: 284 (1881).

var. roseo-alba (Krasch.) Kitamura stat. nov.

A. contorta Aitch., J. L. S. XIX: 169.—Pamp., Fl. Caracorum 203 (1930).—Wendelbo in Nytt Mag. Bot. I: 64 (1952).

Anaphalis roseo-alba Krasch. in Notulae Syst. ex Herb. Kom. IX: 152 (1946).—Boriss. in Fl. URSS XXV: 374.

Anaphalis Aurora Rech. f. & Edelberg, Symb. Afgh. II: 27 (1955).

Nuristan: Shabul Gul (Aug. 6, 1955 S. K.).

Distr. sp. Afghanistan, Himalayas, Karakoram, Pam.-Al., Mishmi Hills, Khasia Mts., China: Kuichau.

The leaves of Afghan and Karakoram plants are smaller and narrower than those of Nepalese plants.

Anaphalis nepalensis Hand.-Mazzetti, Symb. Sin. 1099 (1936).—Kitamura in Fauna and Flora of Nepal Himalaya 245 (1955).

Anaphalis nubigena DC., Prodr. VI: 272 (1838).—Hooker f., F. B. I. III: 63.—Wendelbo in Nytt Mag. Bot. I: 63 (1952).—Rech. f., Symb. Afgh. II: 27 (1955).

Nuristan: Shabul Gul (Aug. 6, 1955 S. K.).

Distr. Afghanistan, Himalayas, Tibet, China: Yunnan, Szechuan, Sikang, Formosa.

Anaphalis sarawachanica (C. Winkler) B. Fedtsch. in O. & B. Fedtsch., Consp. Fl. Turkest. IV: 208 (1911).—Rech. f., Symb. Afgh. II: 27 (1955).—Boriss., l.c. 364, Tab. XXIII, fig. 2.

Antennaria sarawachanica C. Winkler in Acta Horti Petrop. X: 88 (1887).

Distr. Afghanistan, Turkestan.

Anaphalis Virgata Thoms. ex Clarke, Comp. Ind. 107 (1876).—Hooker f., F. B. I. III: 285.—Aitch., J. L. S. XIX: 169.—Boriss., l. c. 374.

Distr. Afghanistan, Himalayas, Pam.—Al.

Anthemis caulescens Aitch. & Hemsl., T. L. S. n. III: 76.—Rech. f. in Ann. Nat. Mus. Wien. LIV: 3–4 (1944), Symb. Afgh. II: 42.

Distr. Afghanistan.

Anthemis Cota L., Sp. Pl. 893 (1753).—Visiani, Fl. Dalm. II: 78 (1874).—Hooker f., F. B. I. III: 312.—Briquet, in Burnat, Fl. Alp. Maritimes VI: 162 (1916).—Rech. f., Symb. Afgh. II: 42 (1955).

Anthemis altissima L., Sp. Pl. 893 (1753).—Boiss., F. O. III: 282.

Kandahar (June 6, 1955), Pulikhumri (July 3, 1955).

Distr. Southern Europe, Asia Minor, Southern Russia, Iran, Afghanistan, Pakistan.

A weed of roadsides.

Anthemis Gayana Boiss., F. O. III: 313 (1875).—Rechinger f., Symb. Afgh. II: 42 (1955).

Distr. Iran, Afghanistan, Pakistan.

Anthemis austro-iranica Rech. f., Aell. et Esf. in Österr. Bot. Zeitschr. 97: 227 (1950), Symb. Afgh. II: 42 (1955).

Distr. Iran, Afghanistan.

Anthemis odontostephana Boiss., Diag. Ser. I, VI: 85 (1855), F. O. III: 319.—Hooker f., F. B. I. III: 312.

Distr. Iran, Afghanistan, Pakistan.

Arctium platylepis (Boiss. et Balansa) Sosn. ex Grossheim, Fl. Kavkaza IV: 164 (1934).—Rechinger f., Symb. Afgh. II: 70 (1955).

Lappa platylepis Boiss. et Balansa, F. O. III: 458.

Distr. Asia Minor, Afghanistan.

Arctium Lappa L., Sp. Pl. 816 (1753).—Aitch., J. L. S. XVIII: 70.—Hooker f., F. B. I. III: 359.

Distr. Europe, Siberia, Asia Minor, Iran, Afghanistan, Himalaya: from Kashmir to Simula.

Artemisia Sect. *Dracunculus*.

Artemisia annua L., Sp. Pl. 847 (1753).—Boiss., F. O. III: 371.—Hooker f., F. B. I. III: 323.—Rechinger f., Symb. Afgh. II: 52 (1955).

Distr. Hungary, Asia Minor, Caucasus, Siberia, Iran, Afghanistan, Pakistan, Manchuria, China, Indo-China, Japan (probably introduced).

Artemisia Dracunculus L., Sp. Pl. 849 (1753).—Hooker f., F. B. I. III: 321.—Rechinger f., Symb. Afgh. II: 54 (1955).

Distr. Afghanistan, Western Asia, Mid. Russia, Siberia, Turkestan, Western Himalaya, Mongolia.

Artemisia campestris L., Sp. Pl. 846.

var. ***canescens*** Boiss., F. O. III: 363 (1875).

Kabul, Tomb of Baber (July 14, 1955 S. K.)—cum ramis floriferis annotinis, cultivated in Kyoto, seeds collected near Kabul by O. Suzuka (Nov. 19, 1952 O. Suzuka).

Distr. Asia Minor, Caucasus, Armenia, Iran, Afghanistan, Karakoram.

The heads are 1.2–1.5 mm broad, 2 mm long and smaller than those of European var. *campestris*.

The Afghan plants are similar to Japanese *Ar. capillaris*. Both are perennial.

Artemisia glauca Pallas ex Willd., Sp. Pl. III: 1831 (1803).—Hooker f., F. B. I. III: 322.—Rechinger f., Symb. Afgh. II: 54 (1955).

Distr. Siberia, Afghanistan, Western Himalaya, Mongolia, North America.

Artemisia japonica Thunb., Fl. Jap. 310 (1784).—Kitamura in Journ. Coll. Sci. Kyoto Imp. Univ. XV: 384 (1940).

Ar. parviflora Aitch. (non Roxb.), J. L. S. XVIII: 70.—Hooker f., F. B. I. III: 322 pro parte.

Artemisia glabrata DC. in Wight Contr. 20 (1834), Prodr. VI: 100.—Wight, Ic. t. 1111.

A. japonica var. *parviflora* Pamp. in Nuovo Giorn. Bot. Ital. XXXIV: 665 (1927) pro parte.

I was astonished to find *A. japonica* in Nuristan. *A. japonica* is fairly variable in Japan. The plant of Nuristan belongs to forma *resedifolia*.

A. parviflora Roxb. (*A. subdigittata* Mattf.) is different from *A. japonica*. *A. parviflora* has the pinnatifid leaves with broad segments. cf. S. Kitamura in Fauna and Flora of Nepal Himalaya 246 (1955). The type specimen of *A. parviflora* Roxb. was obtained from the seeds collected in Nepal.

Artemisia scoparia Wald. et Kit., Pl. rar. Hangariae I: 66, t. 65 (1802).—Boiss., F. O. III: 364.—Aitch., J. L. S. XVIII: 70.—Hooker f., F. B. I. III: 323.—Hoffm. in O. Paulsen, Pl. Olufsen's Pamir Exped. 150 (1903).—Rechinger f., Symb. Afgh.



Fig. 94. *Artemisia nuristanica* Kitam.: 1 Flower-Bud. (Nuristan: Chatrass).

II: 56 (1955).

A. capillaris Thunb. var. *scoparia* Pamp. f. *kohatica* Pamp. in Nuovo Giorn. Bot. Itali. XXXIV: 642 (1927).

A. kohatica F. W. Klatt in Sitzber. Akad. Muench 1878: 91, Compos. Herb. Schlagintweit, Taf. 2, fig. 3 (1880).

Distr. Eurasia.

A. scoparia is annual and has very small heads. *A. campestris* var. *canescens* Boiss. mentioned above is perennial and has also very small heads. J. D. Hooker stated (l. c.) that some specimens of *A. scoparia* both from the plains of India and Tibet, have very woody stocks. His perennial *A. scoparia* is *A. campestris* var. *canescens*. The cyto-taxomical study is necessary for this group.

Ar. scoparia, *Ar. capillaris* may be gathered under *A. campestris*. Morphologically similar races may arise separately in different regions.

Sect. *Abrotanum*

***Artemisia nuristanica* Kitamura sp. nov. Fig. 94**

A. vulgari affinis sed foliis subtus pallidis sparse sericeis.

Perennis. Caulis circ. 1 m altus erectus striatus 2–3 mm diametro sparse puberulus supra medium paniculatim ramosus. Folia radicalia sub anthesi emarcida, caulina inferiora et media ovato-oblonga apice acuta basi subpetiolota vel sessilia 9–10.5 cm longa 5–6.5 cm lata, bipinnatipartita supra viridia puberula subtus pallida adpresse pubescentia glanduloso-punctata, textura papyracea in sicco, laciniis 3–4 jugis, laciniulis lanceolato-oblongis apice obtusis mucronulatis. Folia caulina superiora sursum gradatim minora bipinnatipartita vel pinnatipartita, folia suprema linearia. Inflorescentia anguste paniculata, rachidibus dense pubescentibus. Capitula sessilia heterogama. Receptaculum nudum. Involucrum ante anthesin pubescens, squamae triseriales, exteriores ovatae apice acuminatae vel acutae, hyalino-marginatae dorso virides, interiores ellipticae apice obtusae hyalinae.

Nuristan: Chatrass (Aug. 2, 1955 S. K.)—Typus in Herb. Univ. Kyoto.

Distr. Afghanistan.

Unfortunately our specimen has only flower buds (1.5 mm broad 2 mm long).

The leaves of *A. Roxburghiana* are usually tomentose beneath. The leaves of this species are sparsely pubescent beneath.

Artemisia Roxburghiana Besser in Bull. Soc. Nat. Mosc. IX: 57 (1836).—Pampanini in Nuovo Giorn. Bot. Ital. n. s. XXXIV: 173 (1927).—Rech. f., Symb. Afgh. II: 56 (1955).

var. ***acutiloba*** Pamp., l. c. 174.

A. Roxburghiana Besser var. *purpurascens* Jacquem. ex Aitch., J. L. S. XIX: 170 (1882).

Distr. Afghanistan, Western Himalaya.

Artemisia sacrorum Ledeb. in Mém. Acad. Pétersb. V: 571 (1805).—Hoffm. in

O. Paulsen, Pl. Olufsen's Pamir Exped. 151 (1903).

Distr. Middle and Southern Russia, Sibiria, Dahuria, Tibet, Himalayas, Afghanistan.

Artemisia Skorniakowi C. Winkler in Acta Horti Petrop. XI: 331 (1890).—Linchewsky in Kew Bull. 1949: 188.

Distr. Turkestan.

Artemisia Tournefortiana Reichenb., Icones Exot. I: 6, t. 5 (1824).—Boiss., F. O. III: 372.—Aitch., J. L. S. XIII: 70.—Hooker f., F. B. I. III: 324.—Hoffm. in O. Paulsen, Pl. Olufsen's Pamir Exped. 151 (1903).—Nevski in Fl. et Syst. IV: 286 (1937).—Rech. f., Symb. Afgh. II: 56 (1955).

Distr. Armenia, Iran, Afghanistan, Western Himalaya, Pam.—Al.

Artemisia Turczaninoviana Besser in Nouv. Mém. Soc. Nat. Mosc. III: 23 (1834). var. **dasyantha** Schrenk, Enum. Pl. Nov. 50. —Boiss., F. O. Suppl.: 300 (1888).—Pamp. in Nuovo Giorn. Bot. Ital. n. s. XXXIV: 707 (1927).

Artemisia Turczaninoviana Boiss., F. O. III: 369 (1875).—Pampanini, Fl. Carac. 213 (1930).—Rech. f., Symb. Afgh. II: 56 (1955).

Ar. Falconeri Clarke ex Hook. f., F. B. I. III: 328.

Nuristan: Between Kushitaki and Pronz (Aug. 4, 1955 S. K.), Shibar Pass (June 24, 1955 S. K.).

Distr. sp. Afghanistan, Western Tibet, Karakoram, Altai, Sungaria, Baical, Mongolia.

Our specimens from Afghanistan and Karakoram have pilose florets. Pampanini l. c. reported typical *A. Turczaninoviana* from Hariab district of Afghanistan (Aitch. n. 378).—*Ar. Falconeri* Aitch., J. L. S. XIX: 170.

Sect. Absinthium.

Artemisia Absinthium L., Sp. Pl. 848 (1753).—Boiss., F. O. III: 373.—Aitch., J. L. S. XVIII: 70.—Hooker f., F. B. I. III: 328.—Rech. f., Symb. Afgh. II: 51 (1855).

Distr. Europe, Asia Minor, Siberia, Armenia, Caucasus, Iran, Afghanistan, Western Himalaya.

Artemisia Codringtonii Rech. f. in Österr. Bot. Zeit. XCVII: 233 (1950), Symb. Afgh. II: 54, fig. 42 (1955).

Distr. Afghanistan (Bamian).

Artemisia macrocephala Jacquemont ex DC., Prodr. VI: 125 (1838).—Hooker f., F. B. I. III: 329 (1881).—Rechinger f., Symb. Afgh. II: 55 (1955).

A. Griffithiana Boiss., Diag. Ser. II, III: 31 (1856), F. O. III: 376 (1875).

Distr. Afghanistan, Western Himalaya, Central Asia.

Artemisia persica Boiss., Diag. Ser. I, VI: 91 (1845), F. O. III: 373 (1875).—Aitch., J. L. S. XVIII: 70.—Hooker f., F. B. I. III: 327.—Nevski in Fl. et Syst. IV: 284 (1937).—Rech. f., Symb. Afgh. II: 55 (1955).

Nuristan: Between Kushitaki and Pronz (Aug. 4, 1955 S. K.), between Pushuki and

Kushitaki (Aug. 4, 1955 S. K.), Chatrass (Aug. 2, 1955 S. K.).

Distr. Kurdistan, Iran, Afghanistan, Pam.-Al., Kashmir.

Sect. Seriphidium.

Artemisia maritima group is very abundant in Afghanistan. Its classification is not yet adequate. The following species have been reported from Afghanistan. They may be treated as subspecies or varieties of *A. maritima*, except *A. lobulifolia* Boiss. *Artemisia pauciflora*, *A. Cina*, and *A. kurramensis* are very closely allied, and can not be distinguished even as subspecies or varieties, each other.

Artemisia afghanica Rechinger f. et Köie, Symb. Afgh. II: 51, fig. 40 (1955).

Distr. Afghanistan (C, NE).

Artemisia Aucheri Boiss., F. O. III: 367 (1875).

A. maritima var. *Aucheri* Pamp. in Nuovo Giorn. Bot. Ital. XXXIV: 680 (1927), cum f. *depressa* Pamp.

Distr. Iran, Afghanistan (Herat), Western Himalaya (according to Pamp.).

Artemisia Cina Berg. & Schmidt, Darstell. IV: t. 29C (1863).—Linchewsky in Kew Bull. 1949: 188.—Rech. f., Symb. Afgh. II: 54 (1955).

Distr. Turkestan, Afghanistan (C, NE).

Artemisia Herba-alba Asso, Fl. Arrag. 117, t. 8 (1781).—Boiss., F. O. III: 365.—Linchewsky in Kew Bull. 1949: 188.—Rech. f., Symb. Afgh. II: 54 (1955).

α. densiflora Boiss., F. O. III: 365 (1875).

Distr. Egypt, Syria, Iran, Afghanistan (W).

γ. laxiflora Boiss., l. c.

Distr. Egypt, Palestine, Syria, Iran, Afghanistan (W, N, E, S).

Distr. sp. From Canary Islands, Spain, North Africa to Afghanistan.

Artemisia lamprocaulos Rechinger f. in Ann. Mus. Wien LV: 6 (1944), Symb. Afgh. II: 55 (1955).

Distr. Afghanistan (C, SE), Iran.

The sexuality of the head is not yet mentioned.

Artemisia Lehmaniana Bunge in Mém. Sav. Étr. Pétersb. VII: 340 (1851).—Boiss., F. O. III: 368.

Distr. Turkestan, Afghanistan (Kalou).

Artemisia lobulifolia Boiss., F. O. III: 364 (1875).—Pamp. in Nuovo Giorn. Bot. Ital. n. s. XXXIV: 677 (1927).

Distr. Afghanistan (W), Transcaspia (according to Pamp.).

Artemisia kurramensis Qazilb. in Quarterly Journ. Pharm. & Pharmacol. XXI, No. 3: 330 (1948) nom. nud. in Journ. Ind. Bot. Soc. XXIX: 193 (1950).

Distr. Pakistan, Afghanistan.

Artemisia monogyna Wald. et Kit., Pl. Rar. Hung. I: 77, t. 75 (1802).

A. fragrans Willd., Sp. Pl. III: 1835 (1803).—Boiss., F. O. III: 366.

Distr. sp. Southern Europe, Asia Minor, Caucasus, Southern Siberia, Turkestan, Iran,

Afghanistan.

Artemisia fragrans Willd. var. *dissitiflora* O. Hoffm. in O. Paulsen, Pl. Olufsen's Pamir Exped. 150 (1903) was described from Wakhan.

Artemisia stenocephala Krasch. in Not. Syst. Kom. XVI: 404 (1954).

Distr. Afghanistan, Gorn.-Turkm.

Aster altaicus Willd., Enum. Hort. Berol. 881 (1809).—Boiss., F. O. III: 159.—Aitch., J. L. S. XVIII: 67.—Rech. f., Symb. Afgh. II: 5 (1955).

Heteropappus altaicus (Willd.) Novopokr. in Shed. ad Herb. Fl. ross. VII: 193 (1922).—Tamamsch. in Fl. URSS XXV: 66.

H. canescens (Nees) Novopokr., l. c. 193.—Tamamsch., l. c. 67.

Nuristan: Between Seprigal and Voma (July 29, 1955 S. K.), between Kandai and Seprigal (July 28, 1955 S. K.), between Trokikori and Chatrass (Aug. 1, 1955 S. K.), Doab (June 24, 1955 S. K.), between Doab and Shibar (July 10, 1955 S. K.), between Bulola and Doab (June 25, 1955 S. K.), Zerni (Sept. 2, 1955 T. Umesao), between Sarobi and Kabul (June 18, 1955 S. K.), between Kabul and Sarobi (June 15, 1955 S. K.), between Pulikhumri and Haibak (June 27, 1955 S. K.).

Distr. Turkestan, Himalayas, Iran, Afghanistan, Pakistan, Siberia to Mongolia, China, Manchuria, Korea.

This species is widely distributed from Iran to China, common in Central Asia, and is very variable. As stated by Rechinger (l. c.), Nuristan plants have smaller heads and narrower leaves. I have examined many Eastern Asiatic specimens. Some Mongolian specimens have also smaller heads and narrower leaves. These races may have arisen independently and polyphyletically.

I have cultivated *Aster altaicus* from Mongolia, in our garden, and found that the root of *A. altaicus* produces new plants.

Generally the specimens from Afghanistan resemble well those of Mongolia. *A. altaicus* may have been distributed by human agency.

Aster Aitchisoni Boiss., F. O. Suppl.: 287 (1888).

A. pseudoamellus Aitch. (non Hooker f.), J. L. S. XIX: 168.

Distr. Afghanistan.

Aster flaccidus Bunge in Mém. Sav. Étrang. Pétersb. II: 599 (1835).—Kitamura in Fauna and Flora of Nepal Himalaya 248 (1955).—Rechinger f., Symb. Afgh. II: 51 (1955).

Erigeron flaccidus (Bunge) Botsch. in Not. Syst. Kom. XVI: 388 (1854).

Aster Heterochaeta Benth. in Gen. Pl. II: 272 (1873).—Aitch., J. L. S. XVIII: 68.—Boiss., F. O. Suppl. 287.

Erigeron heterochaeta (Benth.) Botsch., l. c.—Tamamsch. in Fl. URSS XXV: 218, Tab. XIII, fig. 2.

Distr. Afghanistan, Siberia, Himalayas, Karakoram, Kuenlun, Tianshan, Pamir,

Altai, Mongolia, China.

Aster oligocephalus (Schrenk) Kitam. comb. nov.

Chamaegeron oligocephalus Schrenk in Bull. phys.-math. Acad. Sc. Pétersb. III: 105 (1845).—Tamamsch. in Fl. URSS XXV: 120, Tab. XV, fig. 2.

Erigeron Stocksianum Boiss., Diag. Ser. II, III: 8 (1856), F. O. III: 163.

Aster lacunarum Aitch. & Hemsl., J. L. S. XIX: 168, Pl. 16.—Rechinger f., Symb. Afgh. II: 5 (1955).

Distr. Afghanistan- Pakistan, Pribalx., Gorn.—Turkm.

Aster pyrrhopappus Boiss., F. O. III: 158 (1875).

Distr. Afghanistan.

After George Bentham in Gen. Pl. II: 1233, *Psycrogeton cabulicum* Boiss., F. O. III: 156 is related to *Aster molliusculus*.

Atractylis cuneata Boiss., F. O. III: 454 (1875).—Aitch., J. L. S. XVIII: 70.—Rechinger f., Symb. Afgh. II: 70 (1955).

Distr. Afghanistan.

Bidens pilosa L., Sp. Pl. 832 (1753).—Aitch., J. L. S. XVIII: 69.—Hooker f., F. B. I. III: 309.

Distr. Pantropic.

Bidens tripartita L., Sp. Pl. 831 (1753).—Boiss., F. O. III: 251.—Aitch., J. L. S. XVIII: 69.—Hooker f., F. B. I. III: 309.

Pulikhumri (July 5, 1955 S. K.).

Distr. Eurasia, Northern Africa.

Blumea cabulica Rech. f. in Österr. Bot. Zeitschr. XCVII: 222 (1950), Symb. Afgh. II: 26 (1955).

Distr. Afghanistan (Kabul).

Blumea Honigbergeri Rech. f. in Österr. Bot. Zeitsch. XCVII: 221 (1950), Symb. Afgh. II: 26 (1955).

Distr. Afghanistan (Kabul).

Blumea Wightiana DC. in Wight, Contrib. 14 (1834), Prodr. V: 435 (1836).—Aitch., J. L. S. XIII: 68.—Hooker f., F. B. I. III: 261 (1881).

Distr. India, Himalayas, Africa, Burma, Malay, China, Afghanistan.

Brachyactis pubescens (DC.) Aitch. & Clarke, J. L. S. XVIII: 68 (1880) excl. specim.

Conyza pubescens DC., Prodr. V: 281 (1836).

Brachyactis robusta Benth. in Hooker, Ic. Pl. XII: 6 sub t. 1106 (1876).—Aitch., J. L. S. XVIII: 68.—Hooker f., F. B. I. III: 254.—Pamp., Fl. Carac.: 199 (1930).

Nuristan: Eschtaway (Aug. 7, 1955 S. K.).

Distr. Afghanistan, Western Himalaya, Karakoram.

Bracyactis Roylei (DC.) Wendelbo in Nytt Mag. Bot. I: 62 (1952).

Bracyactis umbrosa (Kar. et Kir.) Benth. in Hooker, Ic. Pl. XII: 6 sub t. 1106

(1876).—Hooker f., F. B. I. III: 253.—Pamp., Fl. Carac. 199 (1930).

Erigeron umbrosus (Kar. et Kir.) Buser in Boiss., F. O. Suppl.: 290.—Rechinger f., Symb. Afgh. II: 11 (1955).—Tamamsch., l. c. 285.

Conyza umbrosa Kar. et Kir. in Bull. Soc. Nat. Mosc. XV: 379 (1842).

Conyza Roylei DC., Prodr. V: 381 (1836).

Nuristan: Chatrass (Aug. 2, 1955 S. K.).

Distr. Afghanistan, Western Himalaya, Karakoram, Dz.-Tarb., Pam.-Al.,

Breca arvensis Less., Syn. Comp. 9 (1832).

Cephalonoplos arvense Fourr. in Ann. Soc. Linn. Lyon, n. s. XVII: 95 (1869).

Serratula arvensis L., Sp. Pl. 820 (1753).

Cirsium arvense Scop., Fl. Carn. ed. 2 II: 126 (1772).—Boiss., F. O. III: 552.—Briquet et Cavillier in Burnat, Fl. Alp. Mar. VII: 49 (1931).—Hoffm. in O. Paulsen, Pl. Olufsen's Pamir Exped. 156 (1903).—Petrak in Köie and Rechinger f., Symb. Afgh. II: 178 (1955).

Cnicus arvensis Bernh., Syst. Verz. Erfurt. 156 (1800).—Aitch., J. L. S. XVIII: 71.

Cirsium arvense var. *horridum* Wimm. et Grab., Fl. Sil. II, 2: 92 (1829).—Petrak in Köie and Rechinger f., Symb. Afgh. II: 178 (1955).

Cirsium arvense β. *maritimum* Fries, Fl. Halland. 130 (1817).

Between Herat and Iranian Frontier (July, 1955 K. Yamashita).

Distr. Europe, Western Asia to Himalayas, Siberia.

var. **alpestris** (Naeg.) Kitamura comb. nov.

Cirsium arvense var. *alpestre* Naeg., Cirs. Schw. 104 (1840).—Briquet et Cavillier in Burnat, Fl. Alp. Maritime VII: 54 (1931).

C. arvense var. *argenteum* Bréb., Fl. Norm. 4 éd. 172 (1869).

Cnicus arvensis Hooker f., F. B. I. III: 362 (1881) pro mx. parte.

Between Pulikhumri and Haibak (June 27, 1955 S. K.), Charikar (June 23, 1955 S. K.).

Distr. Mediterranean Region to India, Pakistan: Between Gupis and Gokuch (Oct. 18–19, 1956 K. Honda), between Darkot and Yashin (Oct. 10–11, 1956 K. Honda), along Biafo Lungma (July 19, 1955 S. Nakao).

Breca arvensis is a weed in cultivated fields. Leaves oblong, or lanceolate-oblong pinnatifid and undulate. Spines strong 3 mm long. This is replaced by an other race in Eastern Asia. The eastern race *Breca setosum* (Bieb.) Kitam.—*Cirsium setosum* Bieb., Fl. Taur. Cauc. III: 560 (1819), has always less spinous, not undulate and thicker leaves. The involucre has smaller and more numerous inermous scales. In North China, Manchuria, and Korea, we find another species *Breca segetum* (Bunge) Kitamura—*Cirsium segetum* Bunge, Enum. Pl. Chin. Bor. 36 (1831).

Calendula officinalis L., Sp. Pl. 921 (1753).—Hoffm. in O. Paulsen, Pl. Olufsen's

Pamir Exped. 153 (1903).

Distr. A native of South Europe, cultivated in Afghanistan (Ishkashim).

Callistephus chinensis (L.) Nees, Gen. et Sp. Ast. 222 (1832).—Hoffm. in O. Paulsen, Pl. Olufsen's Pamir Exped. 149 (1903).

Distr. A native of North China and Korea. Cultivated in Afghanistan (Ishikashim).

Carduus lachnocephalus Rechinger f., Symb. Afgh. II: 177, Fig. 120, 121.

Distr. Afghanistan (C).

Carduus onopordioides Fisch. ex Beib., Fl. Taur. Cauc. III: 552 (1819).—Boiss., F. O. III: 516.—Bornm. in Fedde, Rep. Beih. 108: 61 (1938).

C. nutans Hooker f., F. B. I. III: 361.—Boiss., F. O. Suppl. 307.

C. acanthoides Aitch. (non L.), J. L. S. XVIII: 71.

Carduus Edelbergii Rechinger f., Symb. Afgh. II: 175, Fig. 119.

C. nutans var. *lucidus* DC., Prodr. VI: 622 (1838).

Nuristan: Chatrass (Aug. 2, 1955 S. K.), between Trokikorl and Chatrass (Aug. 1, 1955 S. K.), between Voma and Trokikorl (July 31, 1955 S. K.), between Pushuki and Kushitaki (Aug. 4, 1955 S. K.)—f. *albiflora*; Capitula majora 3–4 cm diametro. Pappus 18 mm longus. Achenia 5 mm longa laevia.

Distr. Caucasus, Iran, Turkestan, Afghanistan, Pakistan, Western Himalaya: from Kashmir to Simula, Nubra.

This species is abundant along the Pech River, and is very variable. The heads 1.5–4 cm in diameter. There are every intermediate forms between the large headed plant and the small headed one, as already stated by J. D. Hooker.

Carduus pycnocephalus L., Sp. Pl. 2 ed. 1151 (1763).—Jacq., Hort. Vind. I: 17, t. 44 (1700).—Boiss., F. O. III: 520.—Aitch., T. L. S. n. III: 80.—Rech. f., Symb. Afgh. II: 178 (1955).

Kandahar (June 6, 1955 S. K.), between Mazarisharif and Haibak (July 1, 1955 S. K.).

Distr. Southern Europe, North Africa, Western Asia, Afghanistan.

Carpesium pubescens Wall. ex DC., Prodr. VI: 281.—Rech. f., Symb. Afgh. II: 42 (1955).

Carpesium cernuum L. var. *pubescens* (Wall.) Aitch., J. L. S. XVIII: 69.

Distr. Afghanistan, Himalayas.

As I can not see the Afghan specimen of *C. pubescens* I here enumerate *C. pubescens* Wall. according to Rechinger. I want to know the difference between *C. nepalense* and *C. pubescens*. C. B. Clarke reduced *C. pubescens* to *C. nepalense*. The latter is distinguished from *C. cernuum* by the acute involucre scales.

Carthamus lanatus L., Sp. Pl. 830 (1753).—Boiss., F. O. III: 706.—Nevski in Fl. et Syst. IV: 291 (1937).—Rech. f., Symb. Afgh. II: 185 (1955).

Between Haibak and Mazarisharif (June 27, 1955 S. K.), Kandahar (June 8, 1955 S. K.).

Distr. Mediterranean Region, Iran, Afghanistan, Pam.—Al.

Carthamus oxyacantha Bieb., Fl. Taur. Cauc. II: 283.—Boiss., F. O. II: 709.—Hooker f., F. B. I. III: 386.—Aitch., J. L. S. XVIII: 72.—Nevski in Fl. et Syst. IV: 291.—Rechinger f., Symb. Afgh. II: 185 (1955).

Between Pulikhumri and Haibak (June 27, 1955 S. K.), 15 km east from Kandahar in the field (June 6, 1955 S. K.).

Distr. Caucasus, Mesopotamia, Iran, Turkestan, Afghanistan, Pakistan, Sungaria.

Carthamus tinctorius L., Sp. Pl. 830 (1753).—Boiss., F. O. III: 709.—Aitch., T. L. S. n. III: 82.

Kabul cultivated for the dye (July 22, 1955 S. K.).

Native name Kajura (according to Aitchison).

Distr. A cultivated plant, said to be derived from *C. oxyacantha*. (C. B. Clarke, Comp. Ind. 244). The Japanese plants have incisodentate leaves, while European and Afghan plants have dentate leaves.

Centaurea Balsamita Lam., Ency. I: 667 (1783).—Boiss., F. O. III: 679.—Aitch., T. L. S. n. III: 81.—Rech. f., Symb. Afgh. II: 181 (1955).

Distr. Asia Minor, Mesopotamia, Iran, Afghanistan.

Centaurea Bruguieriana (DC.) Hand.—Mzt. in Ann. Nat. Hofmus. Wien XXVII: 451 (1913).

Tetramorphaea Bruguieriana DC., Prodr. VI: 609 (1838).

Centaurea phyllocephala Boiss., Diag. Ser. I, VI: 134 (1845), F. O. III: 684.—Hooker f., F. B. I. III: 385.—Aitch., T. L. S. n. III: 81.

Distr. Assyria, Mesopotamia, Iran, Afghanistan, Pakistan.

subsp. **Belangeriana** (DC.) Bornm. ex Rech. f., Symb. Afgh. II: 181 (1955).

C. phyllocephala Boiss. β . *Belangeri* (DC.) Boiss., F. O. III: 684.

Tetramorphaea Belangeriana DC., l. c.

Distr. Iran, Afghanistan, Pakistan.

Centaurea Calcitrapa L., Sp. Pl. 917 (1753).—Boiss., F. O. III: 689.—Aitch., J. L. S. XVIII: 72.—Hooker f., F. B. I. III: 385.

Distr. Europe, North Africa, Asia Minor, Syria, Mesopotamia, Iran, Afghanistan, Pakistan, Kashmir.

Centaurea Codringtonii Rech. f. in Österr. Bot. Zeitschr. XCVII: 253 (1950), Symb. Afgh. II: 181 (1955).

Distr. Afghanistan (C, NW).

Centaurea depressa M. Bieb., Fl. Taur. Cauc. II: 364 (1808).—Boiss., F. O. III: 635.—Aitch., J. L. S. XVIII: 72, T. L. S. n. III: 81 (1888).—Hooker f., F. B. I. III: 385.—Rech. f., Symb. Afgh. II: 183 (1955).

Kandahar in fields (June 9, 1955 S. K.), between Gazuni and Kabul (June 7, 1955 H. Kihara), Charikar (June 23, 1955 S. K.), near Kelat (June 10, 1955 S. K.), Doab (June 24, 1955 S. K.).

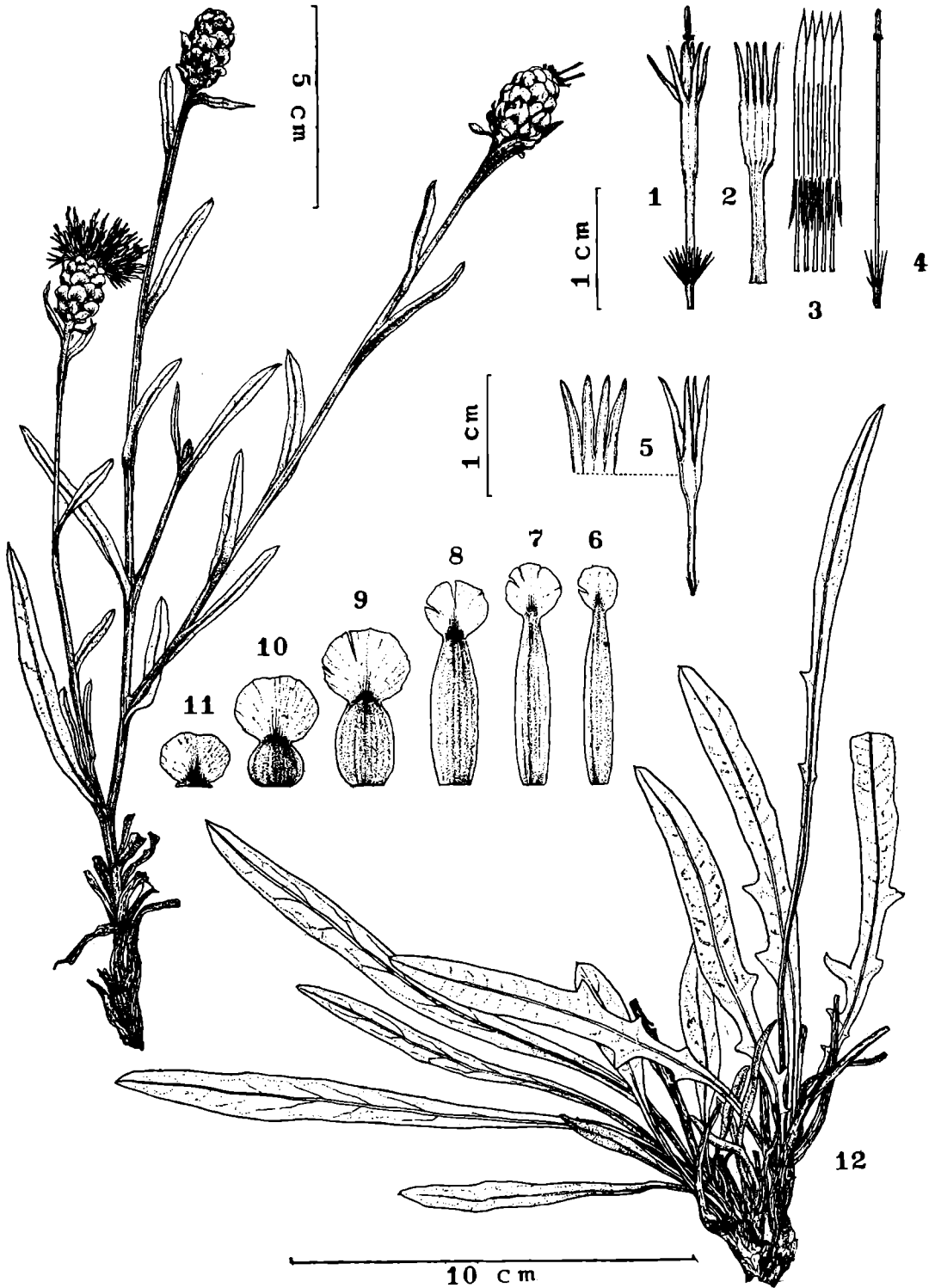


Fig. 95. *Chartolepis Umesaoi* Kitam.: 1 Floret, 2 Corolla, 3 Anthers, 4 Pistil, 5 Corolla, 6—11 Involucral Scales, 12 Radical Leaves. (Taiwara).

Distr. Asia Minor, Armenia, Iran, Afghanistan, Pakistan.

This species is very abundant in the wheat fields, probably because the seeds resemble those of wheat. *C. depressa* is a vicariant of *C. Cyanus*. The former is distinguished from the latter by the larger achenes (5 mm long) with longer pappus (6 mm long).

Centaurea heratensis Rech. & Köie, Symb. Afgh. II: 183, fig. 124, 125 (1955).

Distr. Afghanistan (SW, NW).

Centaurea hierapolitana Boiss., Diag. I, IV: 15 (1844), F. O. III: 620.

β. ***cabulica*** Bornm. in Fedde, Rep. Beih. 108: 63 (1938).

Distr. Afghanistan.

Centaurea iberica Trev. ex Spreng., Syst. III: 406 (1826).—Boiss., F. O. III: 690.—Aitch., T. L. S. n. III: 82.—Hooker f., F. B. I. III: 385.—Rechinger f., Symb. Afgh. II: 184 (1955).

Kandahar (June 6, 1955 S. K.).

Distr. Greece, Asia Minor, Transcaucasia, Mesopotamia, Iran, Afghanistan, Central Asia, Pakistan, Kashmir.

Centaurea pulchella Ledeb., Ic. Pl. Ross. t. 93 (1829).—Boiss., F. O. III: 620.—Aitch., T. L. S. n. III: 81 (1888).—Rech. f., Symb. Afgh. II: 184 (1955).

Distr. Asia Minor, Caucasus, Iran, Central Asia, Afghanistan, Altai, Sungaria.

Centaurea virgata Lam., Ency. I: 670 (1783).—Aitch., J. L. S. XVIII: 72 (1880).

var. ***squarrosa*** (Willd.) Boiss., F. O. III: 652.—Rechinger f., Symb. Afgh. II: 184 (1955).

Charikar (June 23, 1955 S. K.), Zerni (Sept. 2, 1955 T. Umesao), Taiwara (Sept. 8, 1955 T. Umesao), between Siyagird and Charikar (July 11, 1955 S. K.).

Distr. Asia Minor, Syria, Mesopotamia, Transcaucasia, Central Asia, Iran, Afghanistan, Ural, Altai.

Chardinia orientalis (Mill.) O. Kuntze in Acta Horti Petrop. X: 201 (1887).—Nevski in Fl. et Syst. IV: 288 (1937).

Chardinia xeranthemoides Desf. in Mém. Mus. Paris III: 456 (1817).—Boiss., F. O. III: 446.—Aitch., T. L. S. n. III: 77.

Distr. Asia Minor, Mesopotamia, Iran, Afghanistan (W), Pam.—Al.

Chartolepis Umesaoi Kitamura in Acta Phytotax. Geobot. XVII: 33 (1957).

C. lyratae affinis sed laciniis foliorum porrectis, appendicibus squamarum involucri minoribus distinguenda.

Perennis. Caulis caespitosus basi lignescens, collo incrassato, basibus brunneis foliorum vetustorum dense oblecto, 25–50 cm altus inferne 2.5–3.5 mm diametro, striatus arachnoideus, ramosus, ramis ascendentibus monocephalis. Folia radicalia sub anthesi viva rosulata oblanceolata 13–20 cm longa 8–24 mm lata apice obtusa mucronulata basi sensim in petiolum attenuata, margine subintegra vel lyrato-pinnatifida, laciniis

2–3 jugis remotis porrectis vel arcuato-ascendentibus, pagina utrinque parce arachnoidea minute scabra, interdum impressa glanduloso-punctata, textura crassiuscula. Folia caulina sursum gradatim minora linearia, media 5–8 cm longa, suprema 1–2 cm longa, apice acutiuscula mucronulato-spinosa basi ad caulem decurrentia, margine subintegra scabra utrinque arachnoidea, impressa glanduloso-punctata. Capitula solitaria erecta 2.8–3 cm longa 2.5 cm lata in sicco. Involucrum tubulosum 17–20 mm longum 11–14 mm latum in sicco apice leviter contractum basi rotundatum. Squamae 6-seriales imbricatae, exteriores oblongae vel rotundatae 4–5 mm longae 2.5–4.5 mm latae, coriaceae dorso glabrae nitentes estriatae, appendice medio fusca hyalina 5 mm longa primum integra 5 mm lata, deinde irregulariter fissae 6–7 mm latae, squamae mediae oblongae 8–9 mm longae 4.5 mm latae, appendice 5 mm longa demum 6–7 mm lata, squamae interiores 14 mm longae 2.5 mm latae, appendice 3 mm longa 4 mm lata. Receptaculum dense setosum, setis ad 12 mm longis laevibus. Flores marginales neutres, corolla flava 19 mm longa, pars angusta tubi 10 mm longa, lobis 3–4.7 mm longis. Flores hermaphroditi, corolla flava 24 mm longa, pars angusta tubi 12 mm longa, lobis 5.5 mm longis. Antherae apice longe appendiculatae, appendicibus 4 mm longis inter se connatis, basi breviter appendiculatae, appendicibus inter se connatis. Filamenta papilloso-pilosa. Achenia compressiuscula sub lente sericeo-pilosa, 5 mm longa 2 mm lata apice truncata annulata denticulata, basi areola obliqua. Pappus 4.5 mm longus, setis barbellatis, exterioribus 1–1.5 mm longis, mediis 4.5 mm longis, interioribus 1 mm longis.

Hazarajat, Taiwara (Sept. 8, 1955 T. Umesao)—Typus in Herb. Univ. Kyoto.

Distr. Afghanistan.

Closely related to *Chartolepis Biebersteinii* and *C. lyrata*.

Chondrilla Bornmülleri Haeckel in Fedde, Rep. Beih. 108: 69 (1938).—Rech. f., Symb. Afgh. II: 199 (1955).

Nuristan: Between Pronz and Eschtaway (Aug. 5, 1955 S. K.), between Kushitaki and Pronz (Aug. 4, 1955 S. K.).

Distr. Afghanistan.

Chondrilla juncea L., Sp. Pl. 796 (1753).—Boiss., F. O. III: 792.—Rechinger f. Symb. Afgh. II: 199 (1955).

Distr. Europe, Asia Minor, Syria, Kurdistan, Mesopotamia, Armenia, Caucasus, Iran, Afghanistan, Russia eastward to Ural.

Chrysanthemum chrysostachys (Rech. f. & Köie) Kitamura in Acta Phytotax. Geobot. XVII: 34 (1957).

Artemisia chrysostachys Rech. f. & Köie, Symb. Afgh. II: 52, Fig. 41 (1955).

Between Pulikhumri and Haibak (June 27, 1955 S. K.).

The achene is 1.5 mm long, costate, and has distinct pappus. Pappus oblique 0.5 mm long, white lacerate. The pollen grains are echinate. The heads are turning upwards at the anthesis.

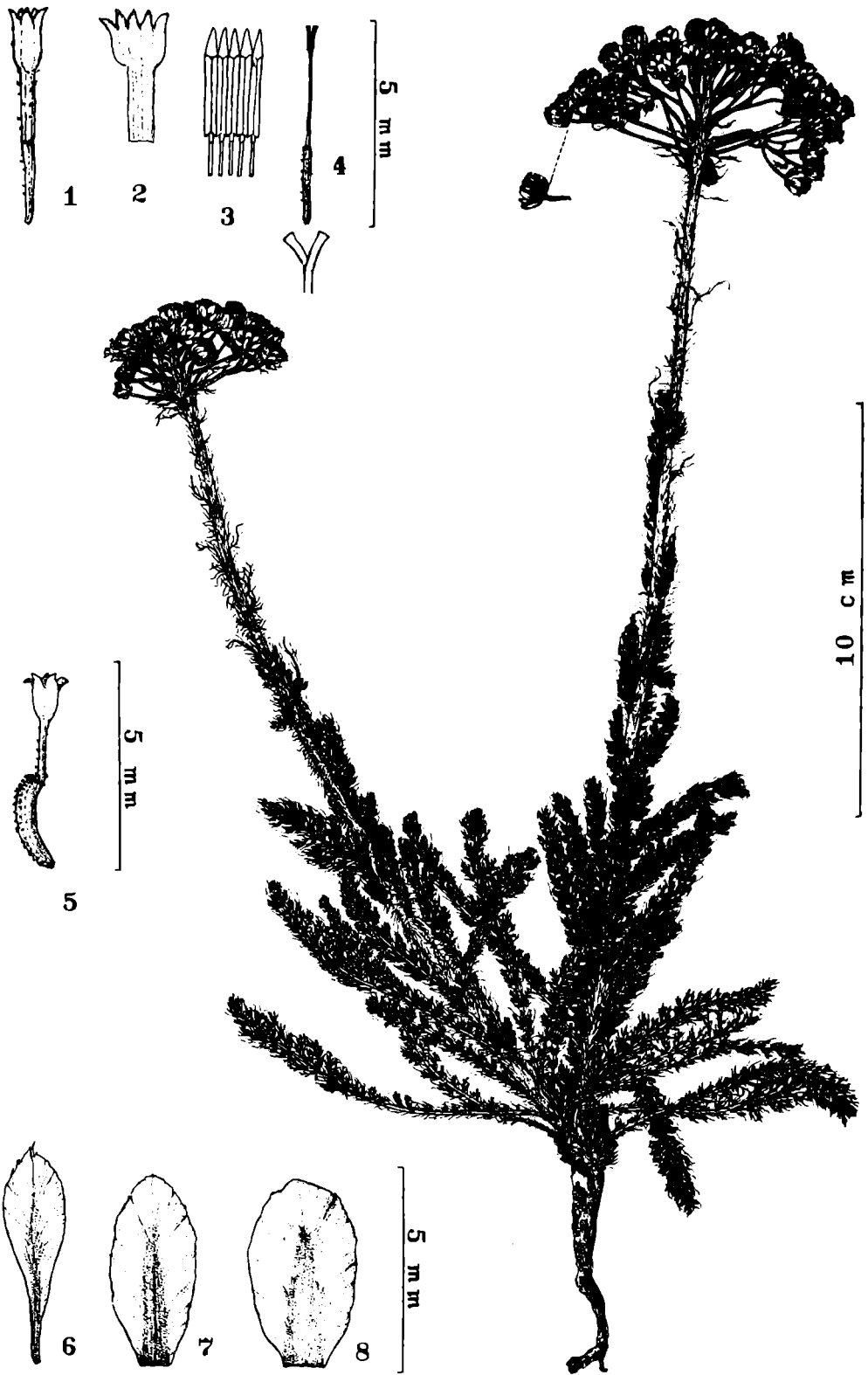


Fig. 96. *Chrysanthemum floccosum* Kitam.: 1 Floret, 2 Corolla, 3 Anthers, 4 Pistil, 5 Achene, 6—8 Involucral Scales. (Between Pulikhumri and Haibak).

Chrysanthemum coronarium L., Sp. Pl. 890 (1753).—Hoffm. in O. Paulsen, Pl. Olufsen's Pam. Exped. 149 (1903).

Distr. A native of Mediterranean Region, cultivated in Afghanistan (Ishikashim).

Chrysanthemum crassicum Rech. f., Symb. Afgh. II: 43 (1955).

Distr. Afghanistan (C, NW).

Chrysanthemum eriobasis Rech. f., Symb. Afgh. II: 44 (1955).

Pagman near Kabul (July 15, 1955 S. K.).

Distr. Afghanistan.

Chrysanthemum Fisherae (Aitch. & Hemsl.) Rech. f., Symb. Afgh. II: 45 (1955).

Tanacetum Fisherae Aitchison et Hemsl., J. L. S. XIX: 170 (1882).

Distr. Afghanistan.

Chrysanthemum floccosum Kitamura in Acta Phytotax. Geobot. XVII: 34 (1957).

Fig. 96.

C. umbellifero affinis sed a quo caule brevior, capitulis majoribus paucioribus, acheniis longioribus apice epapposis differt. Abs *C. simile*, caule inferne dense tomentoso, acheniis glanduloso-hispidulis epapposis, foliis radicalibus copiosis distinguendum.

Radix perennis perpendicularis elongata. Caulis 2–4, simplex 17–27 cm altus 1.5–3.5 mm diametro, praecipue ad basim dense albo-lanatus. Folia radicalia sub anthesi viva copiosa oblanceolata utrinque laxe vel dense lanata, 6–11 cm longa 8–16 mm lata, petiolo 1.5–2 cm longo, tripinnatisecta, laciniis et lacinulis approximatis, lacinulis ultimis subulatis 0.3 mm latis apice cartilagineo-acutis. Folia caulina inferiora et media sursum gradatim minora ascendunt, lanceolata vel oblongo-lanceolata basi amplexicaulia 2–6 cm longa 7–8 mm lata, tri vel bipinnatisecta, laciniis et lacinulis congestis, lacinulis ultimis subulatis, lacinulo terminali elongato ad 8 mm longo. Folia superiora depauperata pinnatifida cum lacinulo terminali filiformi, suprema filiformia 8–10 mm longa 0.1–0.3 mm lata lanata. Inflorescentia coarctato-corymbosa 3–7 cm diametro. Capitula hemisphaerica 7–8 mm lata in sicco, pedicellis 3–5 mm longis. Involucrum hemisphaericum 6–7 mm latum 3.4–4 mm altum, squamae 4–5 seriales imbricatae subaequilongae vel exteriores paulo breviores, squamae exteriores ellipticae apice rotundatae late hyalino-marginatae subintegrae vel leviter laceratae dorso brunnescentes glabratae, mediae oblongae late hyalino-marginatae, interiores oblanceolatae hyalinae apice acuminatae vel caudatae margine laceratae. Flores omnes hermaphroditi, corolla flava tubulosa 2.8 mm longa apice 5-fida, lobis reflexis, pars angusta tubi 1.5 mm longa sparse glanduloso-puberula. Achenia intus curvata 2.3 mm longa 0.4 mm lata dense glanduloso-hispidula epapposa. Receptaculum conicum scorbiculatum.

Between, Pulikhumri and Haibak (June 27, 1955 S. K.)—Typus in Herb. Univ. Kyoto.

Distr. Afghanistan.

Chrysanthemum Griffithii Clarke, Comp. Ind. 148 (1876).—Aitch., J. L. S. XIX: 170.—Wendelbo in Nytt Magasin For Botanikk I: 65 (1955).

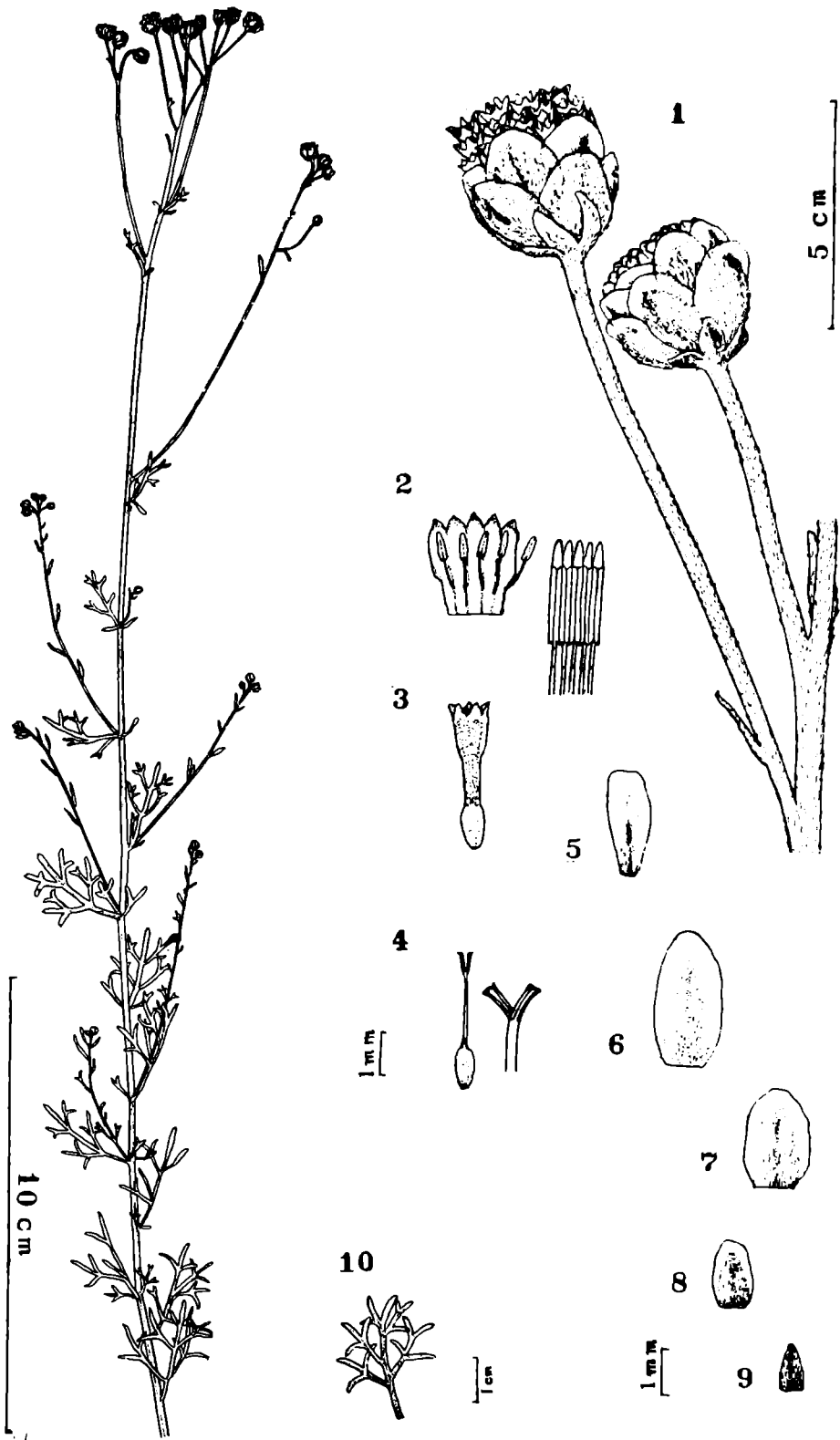


Fig. 97. *Chrysanthemum Hookeri* Kitam.: 1 Heads, 2 Corolla and Anthers, 3 Floret, 4 Pistil, 5—9 Involucral Scales, 10 Leaf. (Voma).

Pyrethrum Griffithii (Clarke) Buser in Boiss., F. O. Suppl. 229 (1888).

Chrysanthemum Stoliczkai Hooker fil. (non Clarke), F. B. I. III: 314.—Pamp., Fl. Carac. 205 (1930).—Rech. f., Symb. Afgh. II: 49 (1955).

Nuristan: Chatrass (Aug. 2, 1955 S. K. post anthesin), between Pushuki and Kushitaki (Aug. 4, 1955 S. K.), Shabul Gul (Aug. 6, 1955 S. K.).

Distr. Afghanistan: Western Himalaya, Karakoram.

Chrysanthemum Griffithii grows on rocks. *Chrysanthemum Stoliczkai* Clarke which has no pappus is different from *Chrys. Griffithii* with dimidiate pappus as stated by Wendelbo.

Chrysanthemum Hookeri Kitamura in Acta Phytotax. Geobot. XVII: 34 (1957).

Tanacetum gracile Hooker f. et Thoms. in Hooker f., F. B. I. III: 318 (1881).

Tanacetum fruticosum Ledeb. var. *gracile* C. B. Clarke, Comp. Ind. 153 (1876).

Chrysanthemum gracile B. Fedtsch., Rastit. Turkest. 737 (1915) non Masf. (1881).—Rech. f., Symb. Afgh. II: 47 (1955).

Nuristan: Between Voma and Chatrass (Aug. 1, 1955), Voma (July 30, 1955 S. K.).

Distr. Pakistan: Between Pakor and Imit (Sept. 16, 1956 K. Honda), between Ishkoman and Darkot (Oct. 10, 1956 K. Honda), Western Himalaya.

Chrysanthemum pamiricum O. Hoffm. in O. Paulsen, Pl. Olufsen's Pam. Exped. in Kjoeb. Vidensk. Meddel. 1903: 149.—Rech. f., Symb. Afgh. II: 47 (1955).

Distr. Central Asia, Afghanistan (C).

Chrysanthemum parthenium (L.) Bernh., Syst. Verz. Erf. 145 (1800).—Aitch., J. L. S. XVIII: 69.—Rechinger f., Symb. Afgh. II: 47 (1955).

Distr. Europe, Transcaucasia, Caucasus, Asia Minor, Afghanistan.

Chrysanthemum polycladum Rech. f., Symb. Afgh. II: 47, (1955).

Distr. Afghanistan (C).

Chrysanthemum porphyrostephanum Rech. f., Symb. Afgh. II: 47, Fig. 37 (1955).

Distr. Afghanistan (NW).

Chrysanthemum Richteria Benth., Gen. Pl. II: 426 (1873).—Rech. f., Symb. Afgh. II: 49 (1955).

Distr. Sungaria, Karakoram, Afghanistan.

Chrysanthemum subsimile Rech. f., Symb. Afgh. II: 49, Fig. 39 (1955).

Distr. Afghanistan (NE).

Chrysanthemum umbelliferum (Boiss.) Burkill in Kew Bull. 1935: 317.—Rechinger f., Symb. Afgh. II: 51 (1955).

Pyrethrum umbelliferum Boiss., F. O. III: 352.

Tanacetum umbelliferum Boiss., Diag. Ser. II, III: 30 (1856).

Between Bulola and Doab (June 25, 1955 S. K.).

Distr. Afghanistan.

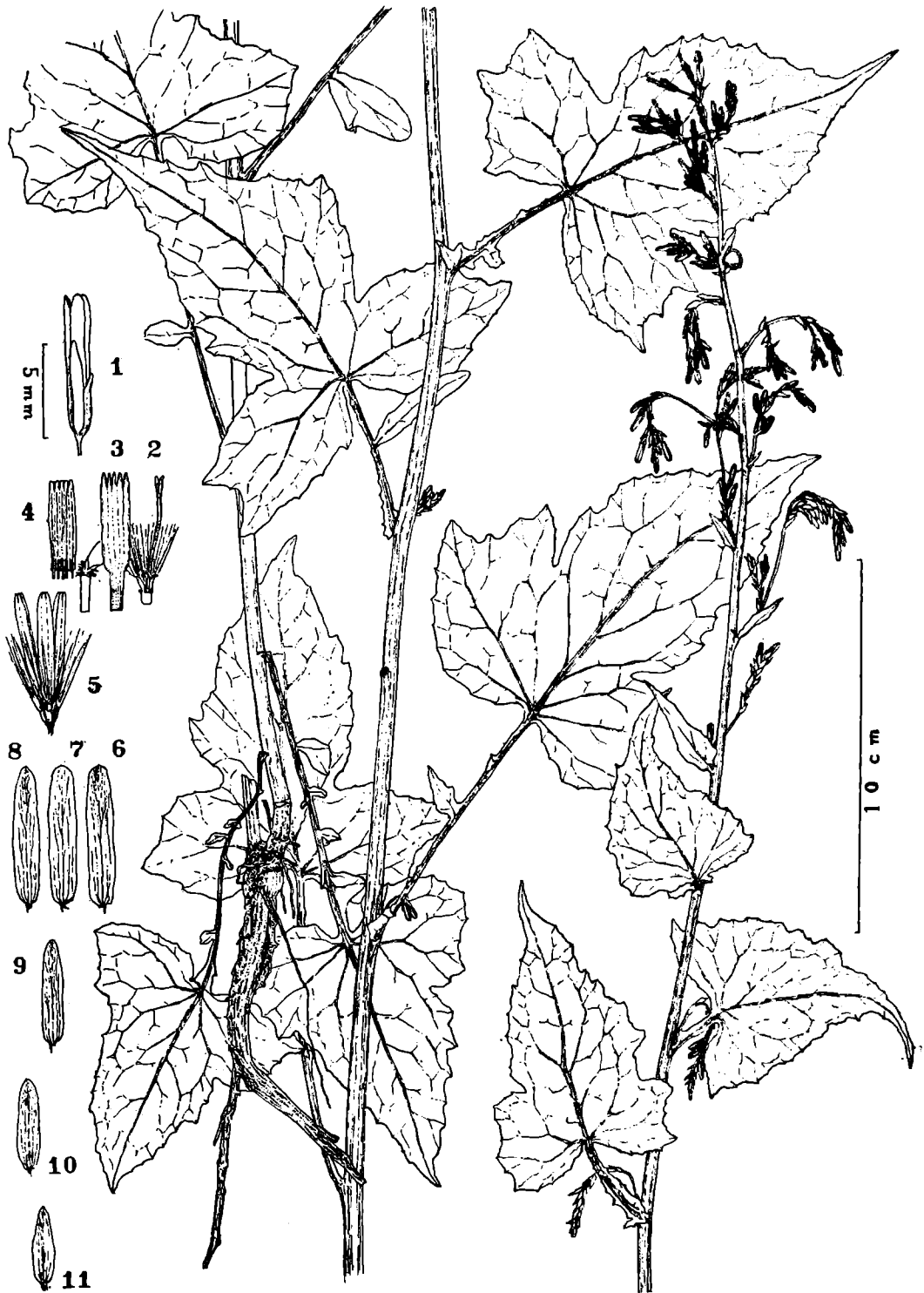


Fig. 98. *Cicerbita nuristanica* Kitam. 1 Head, 2 Pistil, 3 Corolla, 4 Stamens, 5 Florets, 6—11. Involucral Scales. (Nuristan: Pushuki).

Cicerbita Aitchisoniana Beauverd in Bull. Soc. Bot. Gen. sér. II, II: 137, fig. IX-1 (1910).

Lactuca rapunculoides var. Aitch., J. L. S. XIX: 174 (1882).

Distr. Afghanistan (Kuram).

The heads have three florets.

Cicerbita decipiens (Hooker et Thomson ex Clarke) Beauverd in Bull. Soc. Bot. Gen. sér. II, II: 127 (1910).

Lactuca decipiens C. B. Clarke, Comp. Ind.: 266 (1876).—Hooker f., F. B. I. III: 407.

Mulgedium decipiens Hooker et Thoms. mss. ex C. B. Clarke, l. c. 266 (1876).

Between Kushitaki and Pronz (Aug. 4, 1955 S. K.), Shabul Gul (Aug. 6, 1955 S. K.).

Distr. Himalaya: Kashmir, Afghanistan.

New to Afghanistan. Heads with 8 florets. Leaves minutely hirsute on both surfaces.

Cicerbita laevigata (Wall. ex DC.) Beauverd in Bull. Soc. Bot. Gen. sér. II, II: 120, fig. III: 4-6 (1910).

Prenanthes laevigata Wall. ex DC., Prodr. VII: 249 (1839).

Mulgedium laevigatum DC., Prodr. VII: 249 (1839).

Lactuca laevigata C. B. Clarke, Comp. Ind.: 269 (1876) pro parte.

Lactuca macrorhiza Hooker f., F. B. I. III: 408 (1881) pro parte.—Aitch., J. L. S. XIX: 173 (1882).

Distr. Himalaya: from Kashmir to Kumaon, Afghanistan (according to Beauverd).

Cicerbita nuristanica Kitamura in Acta Phytotax. Geobot. XVII: 35 (1957).
Fig. 98.

Radix perennis fusiformis perpendicularis ramosa, collo valide fibrosa. Caulis erectus 85-110 cm altus 4.5-6 mm diametro viridis striatus glaber inferne simplex superne racemosim ramosus, ramis floriferis ante anthesin pendulis glabrescentibus sparse glandulosis. Folia radicalia sub anthesi emarcida, caulina inferiora longe petiolata, lamina ovata basi cordato-hastata apice acuminata 11-22 cm longa 8-12 cm lata margine irregulariter dentato-lobata vel trilobata, dentibus obtusis mucronulatis, supra viridia subtus glauca utrinque sparse crispato-pilosa, textura tenuia, petiolo circ. 10 cm longo exalato vel laciniis 1-2, ovatis 1.5-3 cm longis instructo, sparse crispato-piloso. Folia caulina superiora sursum gradatim minora et breviter petiolata, basi cordato-hastata vel truncato-hastata apice caudato-acuminata alato-petiolata margine obtuse dentata mucronulata. Inflorescentia duplicato-racemosa, bracteis lanceolatis 7-17 mm longis, bracteolis ovato-lanceolatis 2.5 mm longis glabratis vel interdum glandulosis. Involucrum cylindricum 11 mm longum medio 2.5 mm latum, squamae paucae imbricatae glauco-virides glabratae interdum sparsim glandulosae vel glanduloso-pilosae, extimae ovato-oblongae 3 mm. longae apice obtusae, mediae oblongae 6 mm

longae anguste albo-marginatae apice obtusae sub lente ciliolatae, intimae 11 mm longae oblongo-lanceolatae. Flosculi 3–4, corollae tubo superne dense piloso. Receptaculum nudum. Pappus 5 mm longus sordide albus, duplex, setis exterioribus minutis, interioribus elongatis gracilibus minute scabris.

Species *C. Aitchisonianae* affinis a qua caulibus glabris, foliis hastatis glabris distinguenda.

Nuristan, Pushuki circ. 2280 m (Aug. 8, 1955 S. Kitamura).—Typus in Herb. Univ. Kyoto.

Distr. Afghanistan.

The writer found a large association of this species under tall trees. Unfortunately, it was just before the anthesis of this species. This species is situated between *C. rapunculoides* and *C. Aitchisoniana*.

Cicerbita persica (Boiss.) Beauverd in Bull. Soc. Bot. Gen. sér. II, II: 142, fig. XI (1910).

Lactuca persica Boiss., Diag. Pl. Or. Nov. Ser. I, VII: 9 (1846), F. O. III: 806.—Aitch., T. L. S. n. III: 83.

Distr. Iran, Afghanistan (Badghis according to Aitchison), Pakistan.

Cicerbita rapunculoides (DC.) Beauverd in Bull. Soc. Bot. Gen. sér. II, II: 127 (1910).

Mulgedium rapunculoides DC., Prodr. VII: 249 (1839).

Lactuca rapunculoides C. B. Clarke, Comp. Ind. 268 (1876).—Hooker f., F. B. I. III: 407.—Aitch., J. L. S. XVIII: 73.

Distr. Himalaya: from Nepal to Kashmir, Karakoram, Afghanistan (Kuram according to Aitchison).

Cicerbita scoparia (Rech. f. et Köie) Kitamura in Acta Phytotax. Geobot. XVII: 35 (1957).

Lactuca scoparia Rech. f. et Köie, Symb. Afgh. II: 211, fig. 146 (1955).

Between Siyagird and Charikar (July 11, 1955 S. K.), between Bulola and Doab (June 25, 1955 S. K.).

Distr. Afghanistan.

A very robust plant growing in dry places. Leaves scanty.

Cicerbita unicostata Kitamura in Acta Phytotax. Geobot. XVII: 35 (1957). Fig. 99.

Perennis, collo incrassato lignescente. Caulis caespitosus ascendens 35–40 cm altus 1.5–2 mm diametro, glanduloso-pilosus ramosus, ramis ascendentibus. Folia radicalia sub anthesi emarcida, caulina inferiora oblanceolato-oblonga 3–4 cm longa 8–10 mm lata apice obtusa vel rotundata basim versus sensim angustata ad caulem breviter decurrentia utrinque crispato-pilosa margine irregulariter pinnatilobata, lobis paucis deltoideis apice mucronulatis, lobo terminali integri vel denticulato, folia caulina media 1.5–2 cm longa oblonga apice obtusa vel acuta margine saepe integra basi

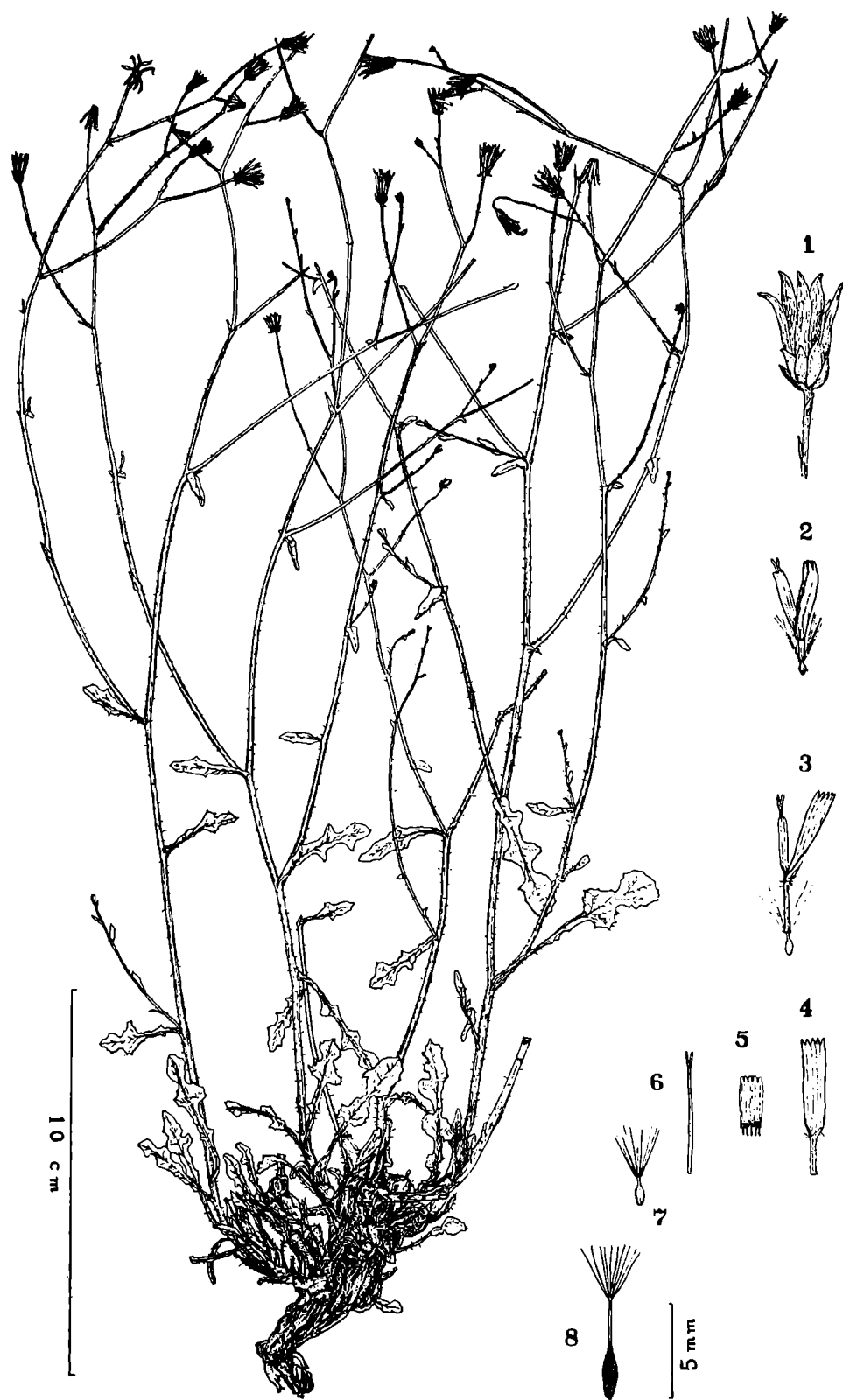


Fig. 99. *Cicerbita unicostata* Kitam.: 1 Involucre, 2 and 3 Florets, 4 Corolla, 5 Stamens, 6 Style, 7 Young Achene, 8 Matured Achene. (Nuristan: Between Voma and Trokikorl).

auriculato-amplexicaulia, folia superiora sursum gradatim minora bracteiformia. Capitula 12-13 flora ad apices ramorum terminantia saepe longe pedunculata, pedunculis 1-3 cm longis glanduloso-pilosis, bracteolis minutis 1 mm longis praeditis. Involucrum sub anthesi 6.5 mm longum post anthesin 9 mm longum, squamae 4-seriales laxae imbricatae dorso glabrae, apice obtusae, extimae ovato-oblongae 1.5-2 mm longae, mediae oblongae 2.5-4 mm longae obtusae, intimae lanceolatae obtusae albo-marginatae, omnes post anthesin basi leviter incrassato-carinatae. Corolla 8 mm longa tubo 3 mm longo superne piloso. Styli rami pallide flavi. Achenia 5 mm longa, nigra, corpore 3 mm longa 0.8 mm lata compressa, distincte marginata, facie 1-nerviata, secus costam transversaliter rugosa, basi sensim contracta apice in rostrum 2 mm longum album sensim abeuntia. Pappus albus duplex, setis exterioribus brevibus interioribus gracilibus persistentibus 3 mm longis, minute scabris.

Nuristan: Between Voma and Trokikori (Jul. 30, 1955 S. K.)—Typus in Herb. Univ. Kyoto.

Species *C. macrorhizae* affinis a qua capitulis minoribus acheniis unicostatis differt.

Cichorium Intybus L., Sp. Pl. 813 (1753).—Boiss., F. O. III: 715 (1875).—Hooker f., F. B. I. III: 391.—Aitch., J. L. S. XVIII: 72, T. L. S. n. III: 82.—Rechinger f., Symb. Afgh. II: 186 (1955).

Native name Kashni.

Kandahar (June 6, 1955 S. K.), Pagman (July 15, 1955 S. K.).

Distr. Europe, Iran: Tabriz (July 28, 1955 K. Yamashita), Pakistan: Guilistan (May 28, 1955 S. K.), India, Kumaon.

In Afghanistan, this species is common in the waste fields.

Cirsium Acarna (L.) Moench, Meth. Suppl. 226 (1802).—Boiss., F. O. III: 549.—Rech. f., Symb. Afgh. II: 178 (1955).

Cnicus Acarna L.—Aitch., T. L. S. n. III: 80 (1886).

Distr. Mediterranean Region, Iran, Afghanistan (W).

Cirsium Argyracanthum DC., Prodr. VI: 640 (1838).—Rech. f., Symb. Afgh. II: 178 (1955).

Cnicus argyracanthus (DC.) Hooker f., F. B. I. III: 362.

Distr. Afghanistan (NE), Pakistan, Himalaya: from Kashmir to Bhutan.

Cirsium esculentum (Siev.) C. A. Mey. ssp. **caucasicum** (C. A. Mey.) Petrak in Köie and Rech. f., Symb. Afgh. II: 178 (1955).

C. esc. var. *β. caucasicum* C. A. Mey.

Distr. Afghanistan (C).

Cirsium Aitchisoni Boiss., F. O. Suppl. 308 (1888).

Cnicus horridus Aitch., J. L. S. XVIII: 71.

Distr. Afghanistan.

Cirsium Köieanum Petr. in Köie and Rech. f., Symb. Afgh. II: 178, Fig. 122 (1955).

Distr. Afghanistan (C).

Cirsium pyramidale Hausskn. et Bornm. in Fedde, Rep. VIII: 260 (1910).—Petrak in Köie and Rech. f., Symb. Afgh. II: 180 (1955).

Distr. Iran, Afghanistan (C).

Cirsium rhizocephalum C. A. Mey., Verz. Pfl. Cauc. 70 (1831).—Petrak in Köie and Rech. f., Symb. Afgh. II: 180 (1955).

Distr. Asia Minor, Iran, Afghanistan.

Cirsium Schelkovnikovii Petrak in Mitt. Kauk. Mus. Tiflis VIII: 44 (1914), l. c. 180 (1955).

Distr. Caucasus, Afghanistan.

Cirsium sorocephalum Fisch. et Mey., Index Sem. Horti Petrop. II: 33 (1835).—Petrak, l. c. 180 (1955).

Distr. Caucasus, Afghanistan.

Cirsium Wallichii DC., Prodr. VI: 643 (1838).—Diels in Engler, Bot. Jahrb. XXIX: 627 (1901).—Kitamura in Fauna and Flora of Nepal Himalaya: 251 (1955).—Petrak in Köie and Rech. f., Symb. Afgh. II: 180 (1955).

Cirsium nepalense DC., l. c. (1838).

Cnicus Wallichii Hooker f., F. B. I. III: 363.

var. **glabratum** (Hooker f.) Wendelbo in Nytt Mag. Bot. I: 67 (1952).

Cn. Wall. var. *glabrata* Hooker f., l. c. 364.

Cirsium Griffithii Boiss., F. O. III: 540.—Petrak in Köie and Rechinger f., Symb. Afgh. II: 178 (1955).

C. Griff. β. crassispinum Bornm. in Fedde, Rep. Beih. 108: 61 (1938).

Nuristan: Between Chatrass and Kushimaicot (Aug. 2, 1955 S. K.), Kandai (July 27, 1955 S. K.)—flores semper albi—forma albiflora.

Distr. Afghanistan (C, E), Pakistan: Karakoram, Skardu (Aug. 2, 1955 S. Nakao), Himalaya: from Kashmir to Bhutan, China: Szechuan.

I compared the Afghan specimens with the Nepalese (type locality) ones. They resemble well and can not be treated as two different species.

Cirsium Wallichii is characterized by the pectinate inner involucre scales, and is distributed from Afghanistan to China. The western representatives have stronger spines; *f. crassispinum* (Bornm.). The eastern representatives have weak spines (after Diels). The specimens from Karakoram, Skardu have stronger spines than those from Nuristan. In Nuristan, *Cirsium Wallichii* is abundant along Pech River. The plant from Kandai (about 1000 m) have smaller heads, while those from Chatrass (about 2000 m) have larger heads (3–3.5 cm in diameter).

Cirsium vulgare (Savi) Ten., Fl. Nap. V: 209 (1835–6).—Airy-Shaw in Fedde, Rep. XLIII: 303, 304 (1938).—Petrak in Köie and Rechinger f., Symb. Afgh. II: 180 (1955).

Distr. Europe, Northern Africa, Western Asia to Turkestan, Afghanistan, Siberia.

var. **hypoleucum** (DC.) Petrak in Köie and Rechinger f., Symb. Afgh. II: 180 (1955) ut var. *hypoleucum* Rchb.

Cirsium lanceolatum Scop. var. *hypoleucum* DC., Prodr. VI: 636 (1838).

C. lanceolatum var. *memorale* Peterm., Fl. lips. 596 (1838).

Pulikhumri (July 3, 1955 S. K.), Chelston Park near Kabul (July 14, 1955 S. K.), Nuristan: Between Kandai and Seprigal (July 28, 1955 S. K.).

Distr. Europe, Western Asia to Afghanistan.

Codonocephalum grande (Schrenk) O. & B. Fedtsch., Consp. Fl. Turkest. IV: 174 (1912).—Rech. f., Symb. Afgh. II: 30 (1955).

Inula grandis Schrenk, Enum. Pl. Nov. 50 (1841).—Gorsh. in Fl. URSS XXV: 441.

Distr. Dz.—Tarb., Syr—Dar., Pam.—Al., Tianshan, Afghanistan (NW, NE).

Codonocephalum Peacockeanum Aitch. et Hemsl. in T. L. S. n. III: 75, t. 31, 32 (1886).—Gorsh. in Fl. URSS XXV: 432 (1959).

Distr. Iran, Afghanistan (NW), Tianshan, Gorn.—Turkm.

Conyza japonica Less., Syn. Comp. 203 (1832).—Hooker f., F. B. I. III: 258.—Rechinger f., Symb. Afgh. II: 26 (1955).

Eastern Prov. Kandai (July 27, 1955 S. K.).

Distr. Afghanistan, Himalayas, India, China, Japan.

The westernmost plant coincides well with the type.

Conyza Ederbergii Rechinger f., Symb. Afgh. II: 25, fig. 16, 17 (1955).

Distr. Afghanistan (Nuristan).

Cousinia (Lampocarpae) **acanthoblephara** Rech. f. et Gilli, Symb. Afgh. II: 70, fig. 56 (1955).

Distr. Afghanistan (E).

Cousinia (Microcarpae) **acanthoptera** Rech. f., Symb. Afgh. II: 72, fig. 57 (1955).

Distr. Afghanistan (C).

Cousinia (Spicatae) **Actinia** Boiss., Diag. Ser. II, III: 55 (1856), F. O. III: 497 (1875).—Bunge, Gatt. Cous. 47 (1865).—C. Winkler in Acta Horti Petrop. XII: 288 (1892).—Bornmüller in Fedde, Rep. Beih. 108: 38, t. 7 (1938).—Rech. f., Symb. Afgh. II: 74 (1955).

Distr. Afghanistan (E).

Cousinia (Appendiculatae) **afghanica** C. Winkler in Acta Horti Petrop. XII: 273 (1892).—Rech. f., Symb. Afgh. II: 74 (1955).

Cousinia cynaroides Aitch. (non C. A. Mey.), T. L. S. n. III: 79.

Distr. Afghanistan (NW, SW).

Cousinia (Appendiculatae) **Aitchisoni** C. Winkler in Acta Horti Petrop. XII: 275 (1892).

Distr. Afghanistan, Iran.

Cousinia (Drepanophorae) **aptera** Aitchison et Hemsl. in J. L. S. XIX: 670

(1882).—Winkler in Acta Horti Petrop. XII: 231 (1892), XIV: 224 (1898).—Rech. f., Symb. Afgh. II: 132 (1955), sub. *C. Olgae*.

Distr. Afghanistan (E), Iran, Turkestan.

Cousinia (Neurocentrae) **arenaria** Bunge, Gatt. Cous. 29 (1865).—Boiss., F. O. III: 468.

Distr. Afghanistan (W).

Cousinia (Lampocarpae) **ariana** Bornm. in Beih. Bot. Centralbl. XXXIV 2: 273 (1917).—Rech. f., Symb. Afgh. II: 75, fig. 58 (1955).

Distr. Afghanistan.

Cousinia (Neurocentrae) **arida** C. Winkler in Acta Horti Petrop. XII: 190 (1892). *C. deserti* Aitchison (non Bunge), T. L. S. n. III: 77.

Distr. Afghanistan.

Cousinia (Odontocarpae) **auriculata** Boiss., Diag. Ser. II, III: 58 (1856), F. O. III: 502.—Bornm. in Fedde, Rep. Beih. 108: 49 (1938).—Rech. f., Symb. Afgh. II: 77 (1955).

Between Sarobi and Kabul (June 18, 1955 S. K.).

Distr. Afghanistan (E, C, NE).

Cousinia (Nudicaules) **Autrani** C. Winkler in Acta Horti Petrop. XII: 193 (1892).

Distr. Afghanistan (?).

Cousinia (Lasiandrae) **Baberi** Boiss., Diag. Pl. Or. Ser. II, III: 53 (1856), F. O. III: 467.—Rechinger f., Symb. Afgh. II: 77 (1955).

Kabul, Tomb of Baber (July 14, 1955 S. K.).

Distr. Afghanistan (C, E).

Cousinia bamiana Rech. f. et Köie, Symb. Afgh. II: 77, fig. 59 (1955).

Distr. Afghanistan (C).

Cousinia (Heteracanthae) **bipinnata** Boiss., Diag. Pl. Or. Ser. II, III: 52 (1856), F. O. III: 478.

C. alata Aitch. et Hemsl. (non C. A. Mey.), T. L. S. n. III: 78.—Winkler in Acta Horti Petrop. XII: 227 (1892).

Between Pulikhumri and Haibak (June 27, 1955 S. K.).

Distr. Afghanistan, Pakistan, Turcomania, Turkestan, Iran.

Achene costulate, denticulate at the apex.

Cousinia (Odontocarpae) **buphthalmoides** Reg. et Schmalh. in Bull. Soc. Nat. Mosc. XL, II: 155 (1867).—Boiss., F. O. III: 501.—Winkler in Acta Horti Petrop. XIV: 230 (1898).—Rech. f., Symb. Afgh. II: 80 (1955).

Distr. Afghanistan (C), Turkestan.

Cousinia (Nudicaules) **Candolleana** Jaub. et Spach, Ill. Pl. Or. II, Tab. 156 (1844–6).—Boiss., F. O. III: 479.—Winkler in Acta Horti Petrop. XII: 194 (1892).

Distr. Iran, Afghanistan.

Cousinia (Odontocarpae) **carthamoides** Aitch. et Hemsl. in J. L. S. XIX: 171, t.

17 (1882).—Winkler in Acta Horti Petrop. XII: 257 (1892).—Rech. f., Symb. Afgh. II: 82 (1955).

Distr. Afghanistan (E).

β. **stenorhachis** Bornm. in Fedde, Rep. Beih. 108: 43, Tab. 9 (1938).

Distr. Afghanistan (E).

Cousinia (Spicatae) **catenata** Rech. f., Symb. Afgh. II: 82, fig. 83 (1955).

Distr. Afghanistan (N).

Cousinia (Homalochaetae) **chionophila** Rech. f. et Köie, Symb. Afgh. II: 84, fig. 62 (1955).

Distr. Afghanistan (C).

Cousinia (Spicatae) **chlorothyrsa** Rech. f. et Köie, Symb. Afgh. II 86, fig. 63 (1955).

Distr. Afghanistan (C).

Cousinia (Heteracanthae) **chrysochlora** Rech. f. et Köie, Symb. Afgh. II: 88, fig. 64 (1955).

Distr. Afghanistan (SW).

Cousinia (Orthacanthae) **congesta** Bunge, Gatt. Cous. 33 (1865).—Boiss., F. O. III: 469.—Aitch., T. L. S. n. III: 78.—Winkler in Acta Horti Petrop. XII: 221 (1892).—Rechinger f., Symb. Afgh. II: 89 (1955).

Distr. Iran, Afghanistan, Turcomania, Pakistan.

Cousinia (Foliaceae) **consanguinea** (Bornm.) Rech. f., Symb. Afgh. II: 89, fig. 65 (1955).

C. scariosa Rgl. ssp. *consanguinea* Bornm. in Beih. Bot. Centr. XXXIV, 2: 282 (1916).

Distr. Afghanistan.

Cousinia (Orthacanthae) **decurrens** Regel in Bull. Soc. Nat. Mosc. XLII: 154 (1867).—Boiss., F. O. III: 469.—Rech. f., Symb. Afgh. II: 91 (1955).

Distr. Afghanistan (C, NE, SE, E).

var. **oligocephala** Regel, Pl. Semen. in Acta Horti Petrop. VI: 316 (1879).—Winkler in Acta Horti Petrop. XII: 220 (1892).

Distr. Afghanistan.

var. **congesta** Regel, l. c.—Winkler, l. c.

Distr. Turkestan, Afghanistan.

Cousinia (Neurocentrae) **deserti** Bunge, Gatt. Cous. 29 (1865).—Boiss., F. O. III: 468.—Rech. f. in Österr. Bot. Zeitschr. 100: 456 (1953), Symb. Afgh. II: 91 (1955).

Distr. Iran, Afghanistan (NW, SW).

Cousinia (Pectinatae) **Edelbergii** Rech. f., Symb. Afgh. II: 91, fig. 67 (1955).

Distr. Afghanistan (C).

Cousinia (Odontocarpae) **elasoonensis** Rech. f. et Edelberg, Symb. Afgh. II: 91, fig. 68 (1955).

Distr. Afghanistan (Nuristan).

Cousinia (Odontocarpace) **elegans** Aitch. et Hemsl. in J. L. S. XIX: 172, t. 18 (1882).—Winkler in Acta Horti Petrop. XII: 261 (1892).—Rech. f., Symb. Afgh. II: 95 (1955).

Distr. Afghanistan (C, E).

Cousinia (Xiphacanthae) **eryngioides** Boiss., Diag. Pl. Or. Ser. I, X: 101 (1849).—Boiss., F. O. III: 490.—Winkler in Acta Horti Petrop. XII: 236 (1892).—Aitch., T. L. S. n. III: 78.—Rech. f., Symb. Afgh. II: 95 (1955).

Distr. Iran, Afghanistan (NW).

Cousinia (Odontocarpace) **eurylepis** Rech. f., Symb. Afgh. II: 95, fig. 65.

Distr. Afghanistan (C).

Cousinia (Xiphacanthae) **fraternella** Bornm. in Beih. Bot. Centr. XXXIV, 2: 273.—Rech. f., Symb. Afgh. II: 95 (1955).

Distr. Afghanistan (C).

Cousinia (Nudicaules) **ghazniensis** Rech. f. et Gilli, Symb. Afgh. II: 97, fig. 70 (1955).

Distr. Afghanistan (E).

Cousinia (Inermes) **Gillii** Rech. f., Symb. Afgh. II: 99, fig. 71 (1955).

Between Pulikhumri and Haibak (June 27, 1955 S. K.).

Distr. Afghanistan (E).

Cousinia (Inermes) **glaphyra** Rech. f. et Köie, Symb. Afgh. II: 99, fig. 72 (1955).

Distr. Afghanistan (C).

Cousinia (Odontocarpace) **gnaphalodes** Bornmüller in Fedde, Rep. XLVI: 281 (1939).

Distr. Afghanistan.

Cousinia (Nudicaules) **Griffithiana** Boiss., Diagn. Pl. Or. Ser. II, III: 55 (1856).—Boiss., F. O. III: 479.

Distr. Afghanistan.

Cousinia (Nudicaules) **gymnoclada** Rech. f. et Köie, Symb. Afgh. II: 102 (1955).

Distr. Afghanistan (NW).

Cousinia (Odontocarpace) **Haeckeliae** Bornmüller in Fedde, Rep. Beih. 108: 40, tab. 8 (1938).

Achenia 3 mm longa 1.8 mm lata distincte 4–5 costata, apice truncata obsolete 4–5 denticulata, basi contracta, areola recta.

Nuristan: Chatrass (Aug. 2, 1955 S. K.), Voma (July 30, 1955 S. K.), between Trokikorl and Chatrass (Aug. 1, 1955 S. K.), between Voma and Trokikorl (July 31, 1955 S. K.).

Distr. Afghanistan (E).

Bornmüller classified *C. Haeckeliae* in Sect. Lampocarpace without seeing its achene.

Cousinia (Heteracanthae) **Hemsleyana** C. Winkler in Acta Horti Petrop. XII:

228 (1892).

Distr. Afghanistan.

Cousinia (Orthacanthae) **heterophylla** Boiss., *Diag. Pl. Or. Ser. II, III*: 54 (1856), *F. O. III*: 470.

Distr. Afghanistan (E).

Cousinia (Xiphacanthae) **Honigbergeri** Bornm. in Fedde, *Rep. XLVI*: 279 (1939).

Distr. Afghanistan.

Cousinia (Spicatae) **hoplites** Bornm. in Beih. Bot. Central. XXXIV, 2: 277 (1916).

Distr. Afghanistan.

Cousinia (Odontocarpae) **Jacea** Rech. f. et Edelberg, *Symb. Afgh. II*: 104, fig. 74 (1955).

Distr. Afghanistan (NE).

Cousinia (Homalochaetae) **khashensis** Rech. f., *Symb. Afgh. II*: 105, fig. 75 (1955).

Distr. Afghanistan (NE).

Cousinia (Odontocarpae) **Koelzii** Rech. f., *Symb. Afgh. II*: 109, fig. 77 (1955).

Distr. Afghanistan (N, E).

Cousinia (Lampocarpae) **kotandarica** Rech. f. et Gilli, *Symb. Afgh. II*: 112, fig. 79.

Distr. Afghanistan (E).

Cousinia **kuramensis** Bornm. in Beih. Bot. Central. XXXIV, 2: 150 (1917).

C. pinarcephala Aitchison (non Boiss.), *J. L. S. XIX*: 171.

Distr. Afghanistan (E).

Cousinia (Lampocarpae) **lachnobasis** Rech. f. et Köie, *Symb. Afgh. II*: 113, fig. 80 (1955).

Distr. Afghanistan (SW).

Cousinia (Heteracanthae) **lachnosphaera** Bunge, *Gatt. Cous. 36* (1865).—Boiss., *F. O. III*: 485.—Rech. f., *Symb. Afgh. II*: 114 (1955).

Distr. Iran, Afghanistan (W).

Cousinia (Foliaceae) **lamprophyllaria** Rechinger f., *Symb. Afgh. II*: 114, fig. 81 (1955).

Distr. Afghanistan (NW).

Cousinia (Lasiandrae) **lasiandra** Bunge, *Gatt. Cous. 40* (1865).—Boiss., *F. O. III*: 466.—Rech. f., *Symb. Afgh. II*: 116 (1955).

Distr. Iran, Afghanistan.

Cousinia (Nudicaules) **leptacantha** Rech. f. et Köie, *Symb. Afgh. II*: 116, fig. 82. (1955).

Distr. Afghanistan (C, NW).

Cousinia (Odontocarpae) **Libanotica** DC., *Prodr. VI*: 556 (1838).—Boiss., *F. O.*

III : 502.—Winkler in Acta Horti Petrop. XII : 257 (1892).

Distr. Afghanistan, Syria.

Cousinia (Lampocarpae) **malurensis** Rech. f., Symb. Afgh. II : 119, fig. 83 (1955).

Distr. Afghanistan (NW).

Cousinia (Lampocarpae) **microcarpa** Boiss., Diag. Pl. Or. Ser. II, III : 59 (1856), F. O. III : 496.—Aitch., J. L. S. XVIII : 70, T. L. S. n. III : 77.—Winkler in Acta Horti Petrop. XII : 246 (1892).—Bornm. in Beih. Bot. Central. XXXIV, 2 : 165 (1917).—Nevski in Fl. et Syst. IV : 289 (1937).—Rech. f., Symb. Afgh. II : 120 (1955).

Cousinia acanthoptera Rech. f., Symb. Afgh. II : 72, Fig. 57, 66B.

Kabul, Chelston Garden (July 14, 1955 S. K.), Charikar (June 23, 1955 S. K.), between Pulikhumri and Haibak (June 27, 1955 S. K.).

Distr. Afghanistan, Iran, Central Asia, Kashmir.

Our specimens coincide well with the figure of *C. acanthoptera*. The achene is obovate oblong 3 mm long smooth, punctate with small purple dots.

var. **latifolia** (O. Kuntze) C. Winkler in Acta Horti Petrop. XII : 247 (1892).

Distr. Turcomania, Turkestan, Afghanistan.

Cousinia (Constrictae) **minuta** Boiss., Diag. Pl. Or. Ser. I, VI : 117 (1845), F. O. III : 489.—Bunge, Gatt. Cous. 8 (1865).—Winkler in Acta Horti Petrop. XII : 266 (1892), XIV : 231 (1898).—Aitch., J. L. S. XIII : 71 (1880).—Bornm. in Fedde, Rep. Beih. 108 : 49 (1938).—Rech. f., Symb. Afgh. II : 120 (1955).

Distr. Afghanistan, Iran, Turkestan, Pakistan, Turcomania.

Cousinia (Drepanophorae) **modesta** Rech. f. et Köie, Symb. Afgh. II : 120, fig. 84 (1955).

Distr. Afghanistan (C, E).

Cousinia (Odontocarpae) **multiloba** DC., Prodr. VI : 554 (1838).—Aitch., J. L. S. XIII : 71 (1880).—Rech. f., Symb. Afgh. II : 122 (1955) cum vars. I, II, III.

Distr. Afghanistan, Iran, Pakistan.

var. **afghanorum** Bornm. in Beih. Bot. Centralb. XXXIV, 2 : 281 (1917).

Distr. Afghanistan.

Cousinia (Heteracanthae) **myriolepis** Rech. f. et Köie, Symb. Afgh. II : 124, fig. 86 (1955).

Distr. Afghanistan (C).

Cousinia (Heteracanthae) **myriotoma** Rech. f. et Köie, Symb. Afgh. II : 126, fig. 87 (1955).

Distr. Afghanistan (SW).

Cousinia Neubaueri Rech. f., Symb. Afgh. II : 128, fig. 88 (1955).

Distr. Afghanistan (C).

Cousinia (Heteracanthae) **neurophylla** Rech. f. et Köie, Symb. Afgh. II : 130, fig. 89.

Distr. Afghanistan (C, NE, E).

Cousinia (Odontocarpace) **Newesskyana** C. Winkler in Acta Horti Petrop. XI : 333 (1892).—Bornm. in Fedde, Rep. Beih. 108 : 48 (1938).—Rech. f., Symb. Afgh. II : 132 (1955).

Distr. Afghanistan (Nuristan), Turkestan.

Cousinia nobilis Rech. f., Symb. Afgh. II : 132, fig. 90 (1955).

Distr. Afghanistan (C).

Cousinia (Drepanophorae) **Olgae** Regel et Schmalh. in Pl. Nov. Fedtsch. 48 (1882).—Winkler in Acta Horti Petrop. XII : 212 (1892).—Bornm. in Fedde, Rep. Beih. 108 : 37 (1938).—Rech. f., Symb. Afgh. II : 132 (1955).

Distr. Afghanistan (C, E), Turkestan, Turcomania.

Cousinia (Appendiculatae) **onopordioides** Ledeb. in Eichwald, Casp. Cauc. 40, t. 30 (1831–33).—Boiss., F. O. III : 507 (1875).—Winkler in Acta Horti Petrop. XII : 277 (1892), XIV : 235 (1898).

Distr. Afghanistan, Iran, Turcomania, Pakistan : Chaman Pass (May 31, 1955 K. Yamashita).

Cousinia (Spicatae) **oophora** Rech. f., Symb. Afgh. II : 133, fig. 91 (1955).

Distr. Afghanistan (NW).

Cousinia (Lampocarpace) **oxytoma** Rech. f., Symb. Afgh. II : 135, fig. 92.

Distr. Afghanistan (C).

Cousinia (Odontocarpace) **parviceps** Rech. f. et Köie, Symb. Afgh. II : 135, fig. 93.

Distr. Afghanistan (C).

Cousinia (Brachyacanthae) **pectinata** Rech. f. in Ann. Naturhist. Mus. Wien, LVII : 76 (1950).

Distr. Afghanistan (Kabul).

Cousinia (Spicatae) **pineticola** Rech. f. et Gilli, Symb. Afgh. II : 138, fig. 95, 103A (1955).

Distr. Afghanistan (Nuristan).

Cousinia (Odontocarpace) **polyneura** Rech. f., Symb. Afgh. II : 140, fig. 96, 103C (1955).

Distr. Afghanistan (E, C).

Cousinia (Spicatae) **pseudactinia** Rech. f., Symb. Afgh. II : 142, fig. 97, 103C (1955).

Distr. Afghanistan (C).

Cousinia pseudocirsium Rech. f., Symb. Afgh. II : 144, fig. 98, 103D (1955).

Distr. Afghanistan (NE).

Cousinia (Odontocarpace) **pseudostenolepis** Rech. f. et Edelbg., Symb. Afgh. II : 147, fig. 99, 103E (1955).

Distr. Afghanistan (NE).

Cousinia (Odontocarpae) **pterocarpa** Boiss., F. O. III: 501 (1875).

Distr. Afghanistan.

Cousinia (Lampocarpae) **pulchella** Bunge, Del. Sem. Hort. Dorpat. 3 (1845).—Boiss., F. O. III: 494.—Rechinger f., Symb. Afgh. II: 147 (1955).

Distr. Afghanistan (NE), Turkestan.

Cousinia pulvinaris Rech. f. et Köie, Symb. Afgh. II: 147, fig. 100.

Distr. Afghanistan (SW).

Cousinia (Odontocarpae) **pynoloba** Boiss., Diag. Ser. II, III: 57 (1856), F. O. Suppl. 305 (1888).—Rech. f., Symb. Afgh. II: 147 (1955).

Cousinia scala Aitch. et Hemsl., J. L. S. XIX: 172.

Distr. Afghanistan.

Cousinia (Spicatae) **racemosa** Boiss., Diag. Ser. II, III: 56 (1856), F. O. III: 497.—Bunge, Gatt. Cous. 47 (1865).—Bornm. in Fedde, Rep. Beih. 108: 38, Tab. 5 (1938).—Rech. f., Symb. Afgh. II: 149 (1955).

Distr. Afghanistan, Pakistan.

Cousinia (Odontocarpae) **ramulosa** Rech. f., Symb. Afgh. II: 149, fig. 101, 103F (1955).

Nuristan: Between Pushuki and Kushimaicot (Aug. 4, 1955 S. K.).

Distr. Afghanistan (NE).

Achene 5–7 mm long, 2–3 mm broad. Involucre floccose with brown hairs, scales 6-seriate.

Cousinia (Homalochaetae) **robusta** Rech. f., Symb. Afgh. II: 151, fig. 102, 103G (1955).

Distr. Afghanistan (C).

Cousinia (Brachyacanthae) **rufidula** Bornm. in Beih. Bot. Central. XXXIV, 2: 270 (1916).—Rech. f., Symb. Afgh. II: 151 (1955).

Distr. Afghanistan (NW, SW).

Cousinia (Foliaceae) **scariosa** Regel in Bull. Soc. Nat. Mosc. XL, II: 154 (1867).—Boiss., F. O. III: 498.—Rech. f., Symb. Afgh. II: 154.

Distr. Afghanistan.

Cousinia (Odontocarpae) **Scheibeana** Bornm. in Fedde, Rep. Beih. 108: 43, Tab. 10 (1938).—Rech. f., Symb. Afgh. II: 154 (1955).

Distr. Afghanistan (NE), Pakistan.

Cousinia (Odontocarpae) **schistosa** Rech. f. et Edelberg, Symb. Afgh. II: 154, fig. 104, 113A (1955).

Distr. Afghanistan (Nuristan).

Cousinia (Heteracanthae) **schizoptera** Juzepzuk ex Rech. f., Symb. Afgh. II: 156 (1955).

Distr. Afghanistan (SW, NW).

I can not find *C. schizoptera* Juzepzuk in Acta Inst. Bot. Acad. Sc. URSS.

Cousinia (Uncinatae) **spuria** Juzepzuk in Acta Inst. Bot. Acad. Sc. URSS ser. I, Fasc. 3: 296 (1937).—Bornm. in Fedde, Rep. Beih. 108: 36 (1938).—Rech. f., Symb. Afgh. II: 156 (1955).

Distr. Afghanistan (NE, Nuristan), Kirghizia.

Cousinia (Heteracanthae) **stenocalathia** Rech. f., Symb. Afgh. II: 156, fig. 105, 113B (1955).

Distr. Afghanistan (NE).

Cousinia (Foliaceae) **stereolepis** Rech. f., Symb. Afgh. II: 158, fig. 106, 113C (1955).

Taiwara (Sept. 8, 1955 T. Umesao).

Distr. Afghanistan (NW).

Cousinia (Odontocarpae) **stereoneura** Rech. f., Symb. Afgh. II: 159, fig. 107, 113D (1955).

Distr. Afghanistan (C).

Cousinia (Orthacanthae) **Stocksii** C. Winkler in Acta Horti Petrop. XII: 216 (1892).—Bornm. in Fedde, Rep. Beih. 108: 36, Tab. 4 (1938) sub Neurocentrae.—Rech. f., Symb. Afgh. II: 161.

Distr. Afghanistan (SW, SE), Pakistan.

Cousinia (Heteracanthae) **Sven-Hediniana** Bornm. in Beih. Bot. Centr. XXXIV, 2: 268 (1917).—Rech. f., Symb. Afgh. II: 161 (1955).

Cousinia Chamaepeuce Aitch. (non Boiss.), T. L. S. n. III: 79.

Cousinia sphaerocephala C. Winkler (non Jaub. et Spach) in Acta Horti Petrop. XII: 203 (1892).

Distr. Afghanistan (NW, SW).

Cousinia (Inermes) **tenella** Fisch. et Mey., Index Seminum Horti Petrop. I: 25 (1835).—Aitch., T. L. S. n. III: 78.—Winkler in Acta Horti Petrop. XII: 198 (1892).

Distr. Afghanistan, Pakistan, Iran, Armenia, Sungaria, Turkestan.

Cousinia (Odontocarpae) **Thomsoni** Clarke, Comp. Ind. 213 (1876).—Hooker f., F. B. I. III: 360.

C. Brandisi Clarke, Comp. Ind. 213, 214.

Distr. W. Himalaya, Afghanistan (according to Clarke, Griff. n. 3275).

Cousinia tragacanthoides Rech. f. et Gilli, Symb. Afgh. II: 161, Fig. 108, 109, 113E (1955).

Distr. Afghanistan (C).

Cousinia (Odontocarpae) **Trollii** Bornm. in Fedde, Rep. Beih. 108: 45, Taf. 11 (1938).

Nuristan: Shabul Gul (Aug. 6, 1955 S. K.).

Distr. Afghanistan (Nuristan).

Cousinia (Uncinatae) **umbrosa** Bunge, Gatt. Cous. 10 (1865).—Boiss., F. O. III:

463.—Winkler in Acta Horti Petrop. II : 188 (1892).—Bornm. in Beih. Bot. Centr. XXXIV, 2 : 135 (1917).—Nevski in Fl. et Syst. IV : 289 (1937).—Rech. f., Symb. Afgh. II : 163.

Cousinia uncinata Regel in Bull. Soc. Nat. Mosc. XL, II : 145 (1867).—Aitch., T. L. S. n. III : 78.

Distr. Afghanistan (NW, C), Iran, Central Asia, Sungaria.

Cousinia (Odontocarpae) **verticillaris** Bunge in Mém. Sav. Étrang. Pétersb. VI : 357 (1851).—Boiss., F. O. III : 500.—Winkler in Acta Horti Petrop. XII : 259 (1892).—Rech. f., Symb. Afgh. II : 165.

Distr. Afghanistan (C), Turkestan.

β. major Boiss., F. O. III : 500 (1875).

Distr. Afghanistan.

Cousinia (Homalochaetae) **Winkleriana** Aitch. et Hemsl., T. L. S. n. III : 79.—Winkler in Acta Horti Petrop. II : 204 (1892).

Distr. Afghanistan.

Cousinia (Heteracanthae) **xanthacantha** Regel in Bull. Soc. Nat. Mosc. XL : II : 156 (1867).—Boiss., F. O. III : 495.—Rech. f., Symb. Afgh. II : 163, fig. 110, 113F (1955).

Distr. Afghanistan (E).

Cousinia (Odontocarpae) **xanthophaenica** Bornm. in Fedde, Rep. Beih. 108 : 46, Taf. 12 (1838).

Distr. Afghanistan (Nuristan).

Cousinia (Spicatae) **xanthothyrsa** Rech. f. et Gilli, Symb. Afgh. II : 165, fig. 111, 113G (1955).

Distr. Afghanistan (E).

Cousinia (Odontocarpae) **xanthula** Rech. f., Symb. Afgh. II : 167, fig. 112, 113H (1955).

Distr. Afghanistan (NW).

Crepis Aitchisonii Boiss., F. O. Suppl. 324 (1888).—Babcock in Univ. Calif. Pub. in Bot. XXII (The Genus *Crepis* II) : 916, Fig. 305 (1947), l. c. XXVI : 213 (1952).—Rech. f., Symb. Afgh. II : 212 (1955).

Distr. Afghanistan.

Crepis corniculata Regel et Schmalh. ex Regel, Pl. Nov. Fedtsch. Reise Turkest. XVIII : 54 (1881).—Hoffm. in O. Paulsen, Pl. Olufsen's Pamir Exped. 159 (1903).—Babcock, l. c. XXII : 531, Fig. 149.

Distr. Turkestan, Pam.—Al., Afghanistan (Wakhan).

Crepis crocea (Lam.) Babc. in Univ. Calif. Pub. Bot. XIX : 400 (1941), l. c. XXII : 503, Fig. 136 (1947), l. c. XXVI : 213 (1952).—Rech. f., l. c. 212 (1955).

Distr. From Altai Reg. through Transbaikalia to Manchuria, North China, Mongolia to Dzungaria, N. E. Tibet, Afghanistan (E).

Crepis flexuosa (DC.) Benth. et Hooker f., Gen. Pl. II, 2: 515 (1873).—Babcock in Univ. Calif. Pub. in Bot. XXII: 534, Fig. 151 (1947), l. c. XXVI: 213 (1952).—Rech. f., Symb. Afgh. II: 212 (1955).

Distr. From China to Tianshan, Pamir, W. Himalaya, Afghanistan (N, S), Karakoram.

Crepis foetida L. subsp. **afghanistanica** Babcock in Univ. Calif. Pub. Bot. XXVI, 2: 213, Fig. 1 (1952).—Rech. f., Symb. Afgh. II: 213 (1955).

Between Pulikhumri and Haibak (June 27, 1955 S. K.).

Distr. Afghanistan (NE, SE).

Crepis Koelzii Babcock in Univ. Calif. Public. Bot. XXVI, 2: 216, Fig. 2 (1952).—Rech. f., Symb. Afgh. II: 213 (1955).

Distr. Afghanistan (N, E).

Crepis Kotschyana Boiss., Diag. Pl. Or. Nov. Ser. I, VII: 13 (1846), F. O. III: 852 (1875).—Babcock in Univ. Calif. Pub. Bot. XXII: 707, Fig. 224 (1947).—Rech. f., Symb. Afgh. II: 213 (1955).

Distr. Syria, Iraq, Iran, Transcaspian Reg., Pakistan, Afghanistan, N. W. Himalaya, Pamiro-Alai, Serawschan, Urmitan.

Crepis oreades Schrenk, Enum. Pl. Nov. II: 32 (1841).—Babcock in Univ. Calif. Pub. Bot. XXII: 499, Fig. 135.—Rech. f., Symb. Afgh. II: 213 (1955).

Distr. Tarbagatai, Dzungaria, S. Siberia, Pamir, Afghanistan, Kazakstan, S. E. Turgai Reg.

Crepis pulchra L. subsp. **turkestanica** Babcock in Univ. Calif. Public. Bot. XIX: 402 (1940), XXII: 667 (1947).—Rech. f., Symb. Afgh. II: 213 (1955).

Between Doab and Pulikhumri (June 26, 1955), Ghunoy near Sarobi (June 15, 1955), Shishigar (June 11, 1955).

Distr. Central and South Turkestan, Afghanistan, Iran, Asia Minor.

Crepis sancta (L.) Babcock ssp. **bifida** (Vis.) Thell. ex Babcock, l. c. XXII: 736, Fig. 236–239 (1947).

Pterotheca Falconeri Hooker f., F. B. I. III: 399 (1889).—Aitch., T. L. S. n. III: 82 (1888).

Crepis Kochiana Boiss., F. O. III: 847 (1875).

Nuristan: Chatrass (Aug. 2, 1955), between Sarobi and Kabul (June 18, 1955), Shishigar (June 11, 1955).

Distr. Balkan States, Aegean Archipelago, Southern Russia, Transcaspia, Transcaucasia, Asia Minor, Syria, Arabia, Pakistan, Afghanistan, Turkestan, N. W. Himalaya.

ssp. **obovata** (Boiss. et Noë) Babcock, l. c. XXII: 741 (1947), XXVI: 221 (1952).—Rech. f., Symb. Afgh. II: 213 (1955).

Distr. Egypt, Arabia, Syria, Caucasus, Asia Minor, W. Turkestan, Iran, Pakistan, Afghanistan.

Echinops cephalotes DC., Prodr. VI: 526.—Boiss., F. O. III: 435.—Rech. f.,

Symb. Afgh. II: 60 (1955).

Distr. Iran, Afghanistan.

Echinops chloroleucus Rech. f., Symb. Afgh. II: 62, fig. 47, 48 (1955).

Doab (July 10, 1955 S. K.).

Distr. Afghanistan.

Echinops chlorophyllus Rech. f. in Österr. Bot. Zeitschr. XCVII: 243 (1950), Symb. Afgh. II: 64, fig. 49, 50.

Kabul, Baber's Tomb (July 14, 1955 S. K.).

f. **niveo-tomentosa** Kitamura f. nov.

Folia subtus niveo-tomentosa.

Charikar (June 23, 1955 S. K.)—Typus in Herb. Univ. Kyoto, Kabul, Baber's Tomb (July 14, 1955 S. K.).

Distr. Afghanistan.

Echinops echinatus DC. in Wight, Contrib. 24 (1834), Prodr. VI: 526.—Hooker f., F. B. I. III: 358 (1881).—Rech. f., Symb. Afgh. II: 64 (1955).

Distr. India, Pakistan, Afghanistan (E).

Echinops Griffithianus Boiss., Diag. Ser. II, III: 39 (1856), F. O. III: 434 (1875).

Distr. Afghanistan (E).

Echinops kandaharensis Rech. f. & Köie, Symb. Afgh. II: 64, fig. 51, 52, (1955).

Distr. Afghanistan (SE), Pakistan: Chaman (June 2, 1955 S. K.).

Echinops malacophyllus Rech. f., Symb. Afgh. II: 66, fig. 53, 54 (1955).

Distr. Afghanistan (E).

Echinops paradoxus Rech. f. in Österr. Bot. Zeitschr. XCVII: 246 (1950), Symb. Afgh. II: 68, fig. 55 (1955).

Distr. Afghanistan.

Echinops villosissimus Bunge in Bull. Acad. Pétersb. VI: 406 (1863).—Boiss., F. O. III: 435 (1875).

Distr. Iran, Afghanistan (NW).

Eclipta prostrata L., Mant. II: 286 (1771).

Eclipta alba Haask., Pl. Jav. Rar. 528 (1848).—Aitch., J. L. S. XVIII: 69 (1880).

Distr. Pantropic.

Erigeron (Trimorphaea) **acris** L., Sp. Pl. 653 (1753).—Boiss., F. O. III: 166 (1875).

Erigeron acris var. *alpina* Lamk. sensu Aitch., J. L. S. XVIII: 68 (1880).

Erigeron orientalis Boiss. sensu Rech. f., Symb. Afgh. II: 9 (1955).

Nuristan: Trokikorl (Aug. 1, 1955 S. K.), between Voma and Trokikorl (July 1, 1955 S. K.).

Distr. Northern Hemisphere.

Perennial. Heads are trimorphous. Stems and leaves are hirsute. Peduncles slender 2–6 cm long.

Erigeron Alexeenkoi Krasch. in Fl. et Syst. III: 343 (1937) in Syn. Psychrogeton Alexeenkoi Krash., l. c.—Botsch. in Fl. URSS XXV: 271.

Erigeron polyadenus Rech. f. et Koie Symb. Afg. II: 15, fig. 7, 8e.

Distr. Afghanistan, Pam.-Al.

Erigeron amorphoglossus Boiss., Diag. Ser. I, VI: 80 (1845), F. O. III: 166 (1875).—Rech. f., Symb. Afgh. II: 13 (1955).

Distr. Afghanistan, Iran.

Erigeron (Euerigeron) **andryaloides** (DC.) Benth. ex Clarke, Comp. Ind. 52 (1876).—Aitch., J. L. S. XVIII: 68 (1880).—Hooker f., F. B. I. II: 255 (1881).—Pamp., Fl. Carac. 201 (1930).—Wendelbo in Nytt Mag. Bot. I: 62 (1952).—Rech. f., Symb. Afgh. II: 17 (1955).—Botsh. in Fl. URSS XXV: 274.

Distr. Afghanistan, Karakoram, Pamir, Western Himalaya.

Erigeron bonariensis L., Sp. Pl. 863 (1753).

Erigeron linifolius Willd., Sp. Pl. III: 1955 (1803).—Rech. f., Symb. Afgh. II: 11 (1955).

Kandahar (June 6, 1955 S. K.).

Distr. Introduced weed, a native of South America.

Erigeron (Euerigeron) **Bungei** Boiss., F. O. III: 164 (1875).

Chamaeeron Bungei (Boiss.) Botsch. in Not. Syst. Herb. Kom. XVI: 383 (1954).

Distr. Afghanistan.

Erigeron cabulicus (Boiss.) Botsch. in Bot. Journ. XLII: 775 (1957), in Fl. URSS XXV: 277, Tab. XVII, fig. 2.

Psychrogeton cabulicum Boiss., F. O. III: 156 (1875).

Erigeron Edelbergii Rech. f. et Köie, Symb. Afgh. II: 18, fig. 9, 15a (1955).

Erigeron Koelzianus Rech. f., l. c. 18, fig. 10, 15b.

Distr. Afghanistan, Pam.-Al., Tianshan.

Erigeron canadensis L., Sp. Pl. 863 (1753).—Boiss., F. O. III: 163 (1875).—Rech. f., Symb. Afgh. II: 5 (1955).

Erigeron myriocephalus Rech. f. et Edelb., Symb. Afgh. II: 6, fig. 2, non Herter (1939).

Kabul (July 18, 1955 S. K.).

Distr. Introduced weed, a native of North America.

Erigeron gusalakensis Rech. f. et Edelberg, Symb. Afgh. II: 9, fig. 4 (1955).

Distr. Afghanistan (Nuristan).

The general figure looks like *E. bonariensis*.

Erigeron himalayensis Vierh. in Beih. Bot. Centralbl. XIX: 491 (1906).—Rech. f., Symb. Afgh. II: 6 (1955).

Nuristan: Chatrass (Aug. 2, 1955 S. K.), between Voma and Trokikorl (July 31,

1955 S. K.), between Trokikorl and Chatrass (Aug. 1, 1955 S. K.).

Distr. Afghanistan, Himalayas.

In August, this species was very abundant along Pech River and was very beautiful.

Erigeron khorassanicus Boiss., F. O. III: 170 (1875).—Rech. f., Symb. Afgh. II: 11 (1955).—Botsch. in Fl. URSS XXV: 280, Tab. XVII, fig. 1 (1959).

Distr. Afghanistan, Iran, Pam.-Al., Tianshan, Gorn.-Turkm.

Erigeron leucophyllus (Bunge) Boiss., F. O. III: 111 (1875).—Botsch. in Fl. URSS XXV: 272.

Erigeron candidissimus Rech. f. et Edelberg, Symb. Afgh. II: 13, fig. 5, 8c.

Between Kandai and Seprigal (July 18, 1955 S. K.).

Distr. Afghanistan, Pam.-Al., Tianshan.

Erigeron mollissimus Rech. f. et Köie, Symb. Afgh. II: 13, fig. 6, 8d (1955).

Distr. Afghanistan (C).

Erigeron monticolus Wall. ex DC., Prodr. V: 286 (1836).—Aitch., J. L. S. XVIII: 68.—Hooker f., F. B. I. III: 255.—Pamp., Fl. Carac. 201 (1930).

Distr. Afghanistan, Himalayas, Karakoram.

Erigeron multicaulis Wall. ex DC., Prodr. V. 292 (1836).—Wendelbo in Nytt Mag. Bot. I: 62 (1952).—Rech. f., Symb. Afgh. II: 9 (1955).

Distr. Afghanistan, Himalayas.

Erigeron multiradiatus Benth., Gen. Pl. II: 281 (1873).—Hooker f., F. B. I. III: 256.—Hand.-Mzt., Symb. Sin. 1094 (1936).—Aitch., J. L. S. XVIII: 681.

Distr. Afghanistan, Himalayas, China: Yunnan, Szechuan.

Erigeron petroiketes Rech. f., Symb. Afgh. II: 8, fig. 3, 8a (1955).—Botsch. in Fl. URSS XXV: 231.

Distr. Afghanistan (NE), Pam.-Al., Tianshan.

Erigeron Poncinsii (Franch.) Botsch. in Bot. Journ. XLII: 776 (1957), in Fl. URSS XXV: 275 (1959).

Aster Poncinsii Franch. in Bull. Mus. Hist. Nat. II, 7: 345 (1896).

Erigeron minjanensis Rech. f., Symb. Afgh. II: 20, fig. 11, 15c (1955).

Erigeron paghmanicus Rech. f., l. c. 22, fig. 13.

Erigeron sanglichensis Rech. f. et Ederberg, l. c. 20, fig. 12, 15d.

Distr. Afghanistan, Himalayas, Dzung.-Kashg., Pamiro-Al., Tibet.

Erigeron pseuderiocephalus M. Pop. in Fl. et Syst. VII: 10 (1948) in clave.—Botsch. in Fl. URSS XXV: 237, Tab. XIV, fig. 4 (1959).

Erigeron discernendus Rech. f., Symb. Afgh. II: 6, fig. 1, 8a (1955).

Distr. Afghanistan, Pam.-Al.

Erigeron stenodon Rech. f. et Edelb., Symb. Afgh. II: 23, fig. 14, 15e (1955).

Nuristan: Eschtaway (Aug. 5, 1955 S. K.).

Distr. Afghanistan (Nuristan).

Erigeron uniflorus L., Sp. Pl. 864 (1753).—Boiss., F. O. III: 165.—Rech. f.,

Symb. Afgh. II: 9 (1955).

Distr. Afghanistan (Nuristan), Arm.-Kurd., Asia Minor, Caucasus, Europe.

Filago arvensis L., Sp. Pl. Add. (1753).—Boiss., F. O. III: 247.—Rech. f., Symb. Afgh. II: 26 (1955).—Smol. in Fl. URSS XXV: 322, Tab. XX, fig. 2.

Nuristan: Between Pushuki and Kushimaicot (Aug. 4, 1955 S. K.)

Distr. Middle and Southern Europe, Ural, Asia Minor, Caucasus, Iran, Afghanistan, Turkestan, Western Siberia, Pakistan, Western Himalaya.

Filago spathulata Presl., Delic. Prag. 93 (1822).—Boiss., F. O. III: 246 (1875).—Rech. f., Symb. Afgh. II: 27 (1955).—Smol., l. c. 321, Tab. XX, fig. 3.

Filago germanica Hooker f. (non L.), F. B. I. III: 277.

Kabul (July 15, 1955 S. K.), Shishigar (June 11, 1955 S. K.).

Distr. Mediterranean Region, Caucasus, Turkestan, Iran, India, Himalaya (eastward to Kumaon).

var. **prostrata** Boiss., F. O. III: 246.—Bornmüller in Engler, Bot. Jahrb. LXVI: 232 (1934).

Distr. Mediterranean Region, Iran, India.

Garhadiolus minutissimus (Bunge) Kitamura in Acta Phytotax. Geobot. XVII: 35 (1957).

Garhadiolus Hedypnois Jaub. et Spach, Ill: Orient. III: t. 284, 285 (1849).—Boiss., F. O. III: 723.—Rech. f., Symb. Afgh. II: 186 (1955).

Rhagadiolus Hedypnois Fischer et Mey., Index Sem. Horti Petrop. IV: 46 (1837) non Allioni, Fl. Pedem. I: 226 (1785).—DC., Prodr. VII: 78 (1839).—Hooker f., F. B. I. III: 392.

Hedypnois minutissima Bunge in Mém. Sav. Étrang. Pétersb. VII: 372 (1847).

Hab. Pagman near Kabul (July 15, 1955 S. K.).

Distr. Asia Minor, Caucasus, Syria, Mesopotamia, Iran, Afghanistan, Pakistan, Kashmir.

The specific name *G. Hedypnois* is not valid, because *R. Hedypnois* Fischer et Mey. is a later homonym of *R. Hedypnois* Allioni (1785).

Garhadiolus papposus Boiss. et Buchse, Aufz. 135, t. 7 (1860).—Boiss., F. O. III: 723.—Nevski in Fl. et Syst. IV: 292 (1937).—Rech. f., Symb. Afgh. II: 186 (1955).

Doab (June 24, 1955 S. K.), Shishigar (June 10, 1955 S. K.).

Distr. Armenia, Iran, Pam.-Al., Afghanistan, Pakistan: Chaman (June 2, 1955 S. K.).

Gnaphalium afghanicum Rech. f. et Köie, Symb. Afgh. II: 27, Fig. 19 (1955).

Distr. Afghanistan (C).

Gnaphalium luteo-album L., Sp. Pl. 851 (1753).—Boiss., F. O. III: 224 (1875).—Hooker f., F. B. I. III: 288.—Aitch., J. L. S. XVIII: 69.—Rech. f., Symb. Afgh. II: 29 (1955).

Nuristan: Between Seprigal and Voma (July 29, 1955 S. K.), between Doab and Pulikhumri (June 26, 1955 S. K.).

Distr. Middle and South Europe, Africa, Asia Minor, Caucasus, Turkestan, Iran, Afghanistan.

G. luteo-album has always pale brown heads while its eastern vicariant, *G. affine* has always yellow heads.

In Nuristan, I expected the existence of *G. affine*, but I found only typical *G. luteo-album*.

Gnaphalium pulvinatum Delile, Fl. Eg. 122, t. 44, f. 1 (1813).—Boiss., F. O. III: 225.—Hooker f., F. B. I. III: 289.—Aitch., J. L. S. XIX: 169.

Distr. Egypt, Afghanistan, Pakistan, India, Burma.

Gundelia Tournefortii L., Sp. Pl. 814 (1753).—Boiss., F. O. III: 421.—Aitch., T. L. S. n. III: 77.

Distr. Asia Minor, Syria, Iran, Afghanistan (W).

Gymnarrhena micrantha Desf. in Mém. Mus. Paris IV: 2, t. 1 (1818).—Boiss., F. O. III: 240.—Rech. f., Symb. Afgh. II: 27 (1955).

Distr. Northern Africa, Arabia, Syria, Mesopotamia, Iran, Afghanistan, Pakistan.

Helichrysum Griffithii Boiss., Diag. Ser. II, VI: 104 (1859), F. O. III: 233.

H. subsimile Rech. f., Symb. Afgh. II: 30, fig. 20 (1955).

Distr. Afghanistan.

Helichrysum plicatum DC., Prodr. VI: 183 (1838).—Boiss., F. O. III: 231.—Rech. f., Symb. Afgh. II: 29 (1955).—Kirpich. in Fl. URSS XXV: 419.

Distr. Afghanistan, Iran, Asia Minor, Greece.

Helichrysum arenarium Moench. *β. stenophyllum* Boiss., F. O. III: 235.

Between Pulikhumri and Haibak (June 27, 1955 S. K.).

Distr. Transcaucasia, Iran, Afghanistan.

Stem herbaceous. Involucral scales about 50, imbricate, outer broad obtuse glabrous, inner narrow spatulate. Rechinger reported (l. c. 30) a plant from Farakulum (K. 2543) which has many imbricated obtuse scales.

Helminthia echinoides (L.) Gärtner, Fruct. II: 368, t. 159, f. 2 (1791).—Boiss., F. O. III: 742.—Rech. f., Symb. Afgh. II: 186 (1955).

Distr. Europe, North Africa, Asia Minor, Syria, Caucasus, Babylonia, Afghanistan.

Hertia intermedia (Boiss.) O. Kuntze, Rev. Gen. 344 (1891).—Rech. f., Symb. Afgh. II: 56 (1955).

Othonnopsis intermedia Boiss., Diag. Ser. II, VI: 106 (1859), F. O. III: 414.—Aitch., J. L. S. XVIII: 70.—Hooker f., F. B. I. III: 356.

Kabul, Tomb of Baber (July 14, 1955 S. K.), Sheer-Darwaza (Mar. 28, 1952 O. Suzuka).

Distr. Iran, Afghanistan, Pakistan: Chaman Pass (May 31, 1955 S. K.), Quetta

(May 28, 1955 S. K.).

Heteracia Szowitzii Fischer et Meyer, Index Sem. Horti Petrop. I: 29 (1835).—Jaub. et Spach, Ill. Orient. III: t. 287 (1847–50).—Boiss., F. O. III: 724.—Aitch., T. L. S. n. III: 82.—Rech. f., Symb. Afgh. II: 186 (1955).

Distr. Armenia, Iran, Turkestan, Sungaria, Kirghiz Steppe, Afghanistan.

Heteroderis pusilla (Boiss.) Boiss., F. O. III: 794.—Rech. f., Symb. Afgh. II: 199 (1955).

Chondrilla pusilla Boiss., Diag. Ser. I, VII: 385 (1846).

Distr. Iran, Turkestan, Afghanistan.

Heteroderis Stocksiana Boiss., F. O. III: 194 (1875).—Rech. f., Symb. Afgh. II: 199 (1955).

Crepis Stocksiana Aitch. et Hemsl., T. L. S. n. III: 82.

Distr. Afghanistan, Pakistan.

Hieracium caucasicum Naeg. & Peter. subsp. **Hohenackeri** Sch. Bip. ex Naeg. & Peter, Hieracien Mittel-Europas I: 491 (1885).—Zahn in Pflanzenreich Heft 82 1370 (1923).—Van Soest in Rech. f., Symb. Afgh. II: 213 (1955).

Distr. Afghanistan (NE), Terek, Kutais, Baku, Tuschetien.

Hieracium maculatum Sm. subsp. **Pollichiae** Sch. Bip. var. **albopilosum** V. Soest in Rech. f., Symb. Afgh. II: 213 (1955).

Distr. Afghanistan (Nuristan).

Hieracium racemosum Wald. et Kit. ex Willd., Sp. Pl. III, 3: 1588 (1803).—Zahn in Pflanzenreich Heft 79: 973 (1922), in Hegi, Ill. Fl. Mittel-Europa IV₂: 1345 (1929).—V. Soest in Rech. f., Symb. Afgh. II: 214 (1955).

Distr. Afghanistan (NE), Europe, Asia Minor.

Hieracium sparsum Friv. subsp. **staraeplaninae** Zahn in Pflanzenreich Heft 79: 1021 (1922).—V. Soest in Rech. f., Symb. Afgh. II: 214 (1955).

Distr. Afghanistan (Nuristan), Bulgaria.

cf. *Hieracium prenanthoides*.

Between Kushimaicot and Pushuki (Aug. 3, 1955), between Pushuki and Kushimaicot (Aug. 6, 1955).

The plants cited above differ from *H. prenanthoides* by stems not so densely glandulous.

Hieracium umbellatum L., Sp. Pl. 804 (1753).—Zahn in Pflanzenreich Heft 79: 907 (1922).

var. **nuristanica** Kitamura var. nov.

Caulis 70–80 cm altus 3–4 mm diametro, inferne subsimplex, superne corymbosim ramosus, pilis albis longis vestitus. Folia radicalia sub anthesi emarcida, caulina inferiora et media lanceolato-oblonga 7–8.5 cm longa 1.5–2 cm lata apice obtusa basi leviter angustata semiamplexicaulia margine irregulariter mucronulato-dentata utrique pilis albis longis sparse pilosa, folia caulina superiora gradatim minora. Capitula

17–35 laxe corymbosim disposita, 25–27 mm lata in sicco, pedunculis 5–30 mm longis, bracteolis lineari-lanceolatis 3–4 mm longis sub capitulo numerosis praeditis, pilis albis adpressis minutis instructis eglandulosis. Involucrum in sicco 11 mm longum 20–23 mm latum, squamae 4-seriales, exteriores gradatim breviores, lanceolatae subglabrae dorso sub lente pilis minutis albis sparsim praeditae, laxe imbricatae apice obtusae. Corolla intense flava, 14–15 mm longa, tubo 4 mm longo. Achenia cylindrica apice truncata, nigropurpurascens 3.5 mm longa. Pappus 5.5 mm longus sordidus, biserialis, exterioribus brevibus, interioribus longis apice attenuatis minute scabris.

Nuristan: Pushuki (Aug. 8, 1955 S. K.)—Typus in Herb. Univ. Kyoto.

This variety is characterized by the semiamplexicaul leaves and the larger achenes (3.5 mm. long).

Hieracium umbellatum var. *lanceolatum* Hooker f. from Karakoram, is also distinct by the semiamplexicaul leaves. But the leaves are smaller and the achenes are 2–2.5 mm. long. The heads are smaller and fewer (6–7, 1–3 in Hooker's description). The stem about 40 cm tall.

Hieracium umbellatum of Japan has the achenes 2.5–3 mm long, and the leaves usually not semiamplexicaul.

Ifloga Fontanessi Cass. in Dict. Sc. Nat. XXIII: 14 (1822).—Aitch., T. L. S. n. III: 75.—Hooker f., F. B. I. III: 277.

Ifloga spicata Sch.-Bip. in Webb. & Berth., Phyt. Canar. II: 310 (1936–50).—Boiss., F. O. III: 248.

Distr. Mediterranean Region, Iran, Afghanistan, Pakistan, India.

Inula afghanica Rech. f. & Kōei, Symb. Afgh. II: 31, Fig. 21 (1955).

Distr. Afghanistan (C).

Inula obtusifolia Kern. in Ber. Naturw. Verz. Innsbruck I: 111 (1870).—Hooker f., F. B. I. III: 293.

var. **Clarkei** Hooker f., l. c.

Inula obtusifolia Rech. f., Symb. Afgh. II: 31, Fig. 22 (1955).

Distr. Afghanistan (NE), Western Himalaya, Karakoram.

Inula Pentanema (Aitch. et Hemsl.) Kitamura comb. nov.

Inula divaricata (Cass.) Boiss., F. O. III: 200 (1875), non nutt. (1818).—Rech. f., Symb. Afgh. II: 31 (1955).

Pentanema divaricatum Cass. in Bull. Phil. 1818: 76.—Jaub. et Spach, Ill. t. 350 (1850–3).—Gorsh. in Fl. URSS XXV: 480.

Vicoa Pentanema Aitch. et Hemsl., T. L. S. n. III: 75.

Distr. Africa, East Mediterranean Region, Mesopotamia, Iran, Afghanistan (SW), Pakistan, Kara-Kum., Pam.-Al.

Inula racemosa Hooker f., F. B. I. III: 292 (1881), l. c. Pl. XX: 1975 (1891).—Kitamura in Fauna and Flora of Nepal Himalaya 261 (1955).

Nuristan: Between Trokikorl and Chatrass (Aug. 1, 1955 S. K.), between Chatrass

and Budigrah (Aug. 2, 1955 S. K.).

Distr. Afghanistan (Nuristan), Western Himalaya.

Inula rhizocephala Schrenk, Enum. Pl. Nov. Schrenk lect. 51 (1841).—Boiss., F. O. III: 196.—Hemsl. in Hook., Ic. Pl. XVIII: 1730 (1888).—Wendelbo in Nytt Mag. Bot. II: 64 (1952).—Rech. f., Symb. Afgh. II: 34 (1955).—Gorsh., l. c. 472.

Taiwara (Sept. 8, 1955 T. Umesao), Kabul (July 8, 1955 S. K.).

Distr. Iran, Afghanistan, Dz.-Tarb., Pam.-Al., Tianshan, Gorn.-Turkm.

Inula rhizocephaloides Clarke, Comp. Ind. 124 (1876).—Hooker f., F. B. I. III: 295.—Aitch., J. L. S. XVIII: 69.—Rech. f., Symb. Afgh. II: 34 (1955).

Nuristan: Eschtaway (Aug. 1, 1955 S. K.).

Distr. Afghanistan, Western Himalaya, Karakoram.

Inula vestita Wall. ex DC., Prodr. V: 470 (1836).—Boiss., F. O. III: 199.—Rech. f., Symb. Afgh. II: 34 (1955).

Vicoa vestita Benth., Gen. Pl. II: 335 (1873).—Hooker f., F. B. I. III: 297.

Distr. Afghanistan, Pakistan, Himalayas, India.

Ixeris afghanica Rech. f. et Köie, Symb. Afgh. II: 211, fig. 147 (1955).

Distr. Afghanistan (C).

Jurinea carduiformis Boiss., Diag. Ser. I, VI: 111 (1845), F. O. III: 577.—Rech. f., Symb. Afgh. II: 172 (1955).

Outreya carduiformis Jaub. et Spach, Ill. Or. I^r: t. 68 (1842-3).

Distr. Mesopotamia, Iran, Afghanistan, Pakistan.

Jurinea Crupiniastrium Bornm. in Fedde, Rep. Beih. 108: 53, Taf. 15 (1938).

Distr. Afghanistan (Nuristan).

Jurinea dschelalabadensis Bornm. in Fedde, Rep. Beih. 108: 58, Taf. 19 (1938).

Distr. Afghanistan (E).

Jurinea dumulosa Boiss., F. O. III: 569 (1875).—Rech. f., Symb. Afgh. II: 174 (1955).

Distr. Iran, Afghanistan (W).

Jurinea leptoloba DC., Prodr. VI: 675 (1838).—Boiss., F. O. III: 572.—Aitch., J. L. S. XIX: 173.

Distr. Iran, Afghanistan.

Jurinea mallophora Rech. f. et Köie, Symb. Afgh. II: 174, Fig. 117 (1955).

Distr. Afghanistan (C).

Jurinea megalantha Rech. f., Symb. Afgh. II: 174, Fig. 118 (1955).

Distr. Afghanistan (SE).

Jurinea modesta Boiss., Diag. Ser. II, III: 50 (1856), F. O. III: 584.

Distr. Afghanistan (E).

Jurinea monocephala Aitch. et Hemsl., T. L. S. n. III: 80 (1886).

Distr. Afghanistan.

Jurinea nuristanica Bornm. in Fedde, Rep. Beih. 108: 52, Taf. 14 (1938).—Rech. f., Symb. Afgh. II: 175 (1955).

Saussurea nuristanica (Bornm.) Rech. f., l. c. 170.

Nuristan: Between Kushitaki and Pronz (Aug. 4, 1955 S. K.).

Distr. Afghanistan (Nuristan).

The bristles of the pappus are numerous, unequal.

Jurinea ramosissima DC., Prodr. VI: 677 (1838).—Boiss., F. O. III: 569.

Distr. Iran, Afghanistan.

Jurinea variabilis Aitch. et Hemsl., T. L. S. n. III: 80, t. 4 (1888).

Distr. Afghanistan (NW).

Koelpinia linearis Pallas, Reise III: 755 (1776).—Boiss., F. O. III: 721.—Jaub. et Spach, Ill. Or. tab. 286 (1847–50).—Hooker f., F. B. I. III: 392.—Aitch., J. L. S. XVIII: 73, T. L. S. n. III: 82.—Rech. f., Symb. Afgh. II: 186 (1955).

Hab. Kandahar (June 18, 1955 S. K.).

Distr. Central and Western Asia, N. Africa, S. Russia, Afghanistan, Pakistan: Quetta (May 2, 1952 O. Suzuka), India, Kashmir, Panjab.

Lachnophyllum gossypinum Bunge in Mém. Sav. Étrang. Pétersb. VII: 327 (1847).—Boiss., F. O. III: 172.—Rech. f., Symb. Afgh. II: 40 (1955).—Tamamsch. in Fl. URSS XXV: 288, Tab. XVI, fig. 1.

Distr. Afghanistan (N), Turkestan.

Lactuca dissecta Don, Prodr. Fl. Nep. 164 (1825).—Hooker f., F. B. I. III: 405.—Rech. f., Symb. Afgh. II: 203 (1955).

Nuristan: Chatrass (Aug. 2, 1955 S. K.).

Distr. Himalayas, Tibet, Afghanistan, Pakistan.

Lactuca glaucifolia Boiss., F. O. III: 813.—Rech. f., Symb. Afgh. II: 205 (1955).

Distr. Iran, Afghanistan (SW, C).

Lactuca Edelbergii Rech. f., Symb. Afgh. II: 205, fig. 142, 145 (1955).

Distr. Afghanistan (Nuristan, Voma).

Lactuca intricatissima Rech. f., Symb. Afgh. II: 207, fig. 143, 145 (1955).

Distr. Afghanistan (C, N, E).

Subaphyllous plant (according to Rechinger).

Lactuca Koelzii Rech. f., Symb. Afgh. II: 208, fig. 144, 145 (1955).

Distr. Afghanistan (NE).

Lactuca longifolia (Wall.) DC., Prodr. VII: 135 (1839).—Hooker f., F. B. I. III: 405.

Nuristan: Chatrass (Aug. 2, 1955 S. K.), Trokikorl (Aug. 1, 1955 S. K.), between Chatrass and Budigrah (Aug. 2, 1955).

Distr. Himalaya: from Kashmir to Nepal, Eastern Afghanistan.

The writer sowed the seeds from Chatrass in the botanic garden of Kyoto

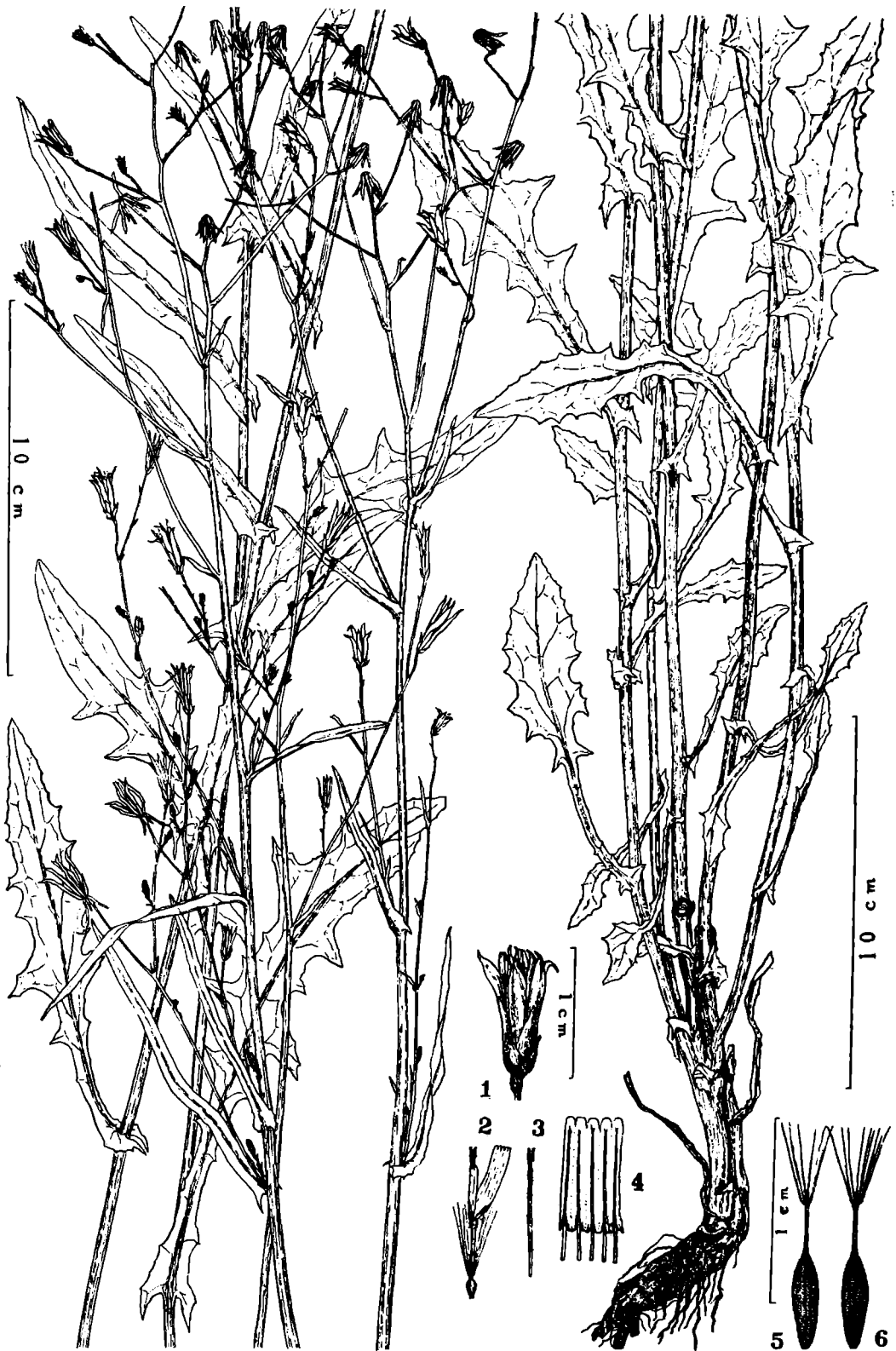


Fig. 100. *Lactuca nuristanica* Kitam.: 1 Involucre, 2 Floret, 3 Style, 4 Stamens, 5 and 6 Achenes. (Nuristan: Chatrass).

University. The plant is 1.4 m high. The stem densely hispid at the base. While the mother wild plant has the glabrous stem.

Lactuca longirostrata Aitch. et Hemsl., T. L. S. n. III: 82 (1888).

Distr. Afghanistan (Hari-rud Valley).

Annual related to *L. undulata* (according to Aitchison).

Lactuca orientalis Boiss., F. O. III: 819 (1875).—Hooker f., F. B. I. III: 404.—Aitch., J. L. S. XVIII: 73, T. L. S. n. III: 83.—Rech. f., Symb. Afgh. II: 205 (1955).

Phaenopus orientalis Boiss., Voy. Esp. II: 390.—Nevski in Fl. et Syst. IV: 294 (1937).

Distr. Syria and Armenia, Pam.—Al., Iran, Afghanistan, Pakistan: Between Pakol and Imit (K. Honda), between Yashin and Batakush (K. Honda), Tibet.

Lactuca (§ *Scariola*) ***nuristanica*** Kitamura in Acta Phytotax. Geobot. XVII: (1957). **Fig. 100.**

Perennis. Caulis (interdum subcaespitoso-ramosus) erectus circ. 1 m altus, circ. 4 mm in diametro, striatus glaber, superne corymbosim ramosus, ramis divaricatis gracilibus glaber. Folia radicalia sub anthesi emarcida, caulina inferiora et media oblanceolato-oblonga 10–11 cm longa 2.5–3 cm lata apice acuta basim versus sensim angustata auriculato-amplexicaulia, auriculis acutis, margine irregulariter pinnatiloba, lobis paucis deltoideis acutis, textura tenuia in sicco, utrinque glabra, folia superiora gradatim minora linearilanceolata acuminata. Capitula laxe corymbosim disposita, pedunculis 1–3 cm longis gracilibus, bracteolis minutis lanceolatis 1 mm longis praeditis. Involucrum viride glabrum sub anthesi 9 mm longum, medio 3 mm latum in sicco, post anthesin 12 mm longum, squamae 3 seriales laxe imbricatae, extimae ovatae acutae 2–2.5 mm longae, intimae ovato-oblongae apice acuminatae 3.5–4 mm longae. Flosculi 9–15. Corolla flava 10 mm longa, tubo 5.5 mm longo, apice piloso. Styli rami graciles pallide flavi. Antherae flavae. Achenia nigra 7 mm longa, corpore 4.5 mm longa leviter compressa 1 mm lata longitudinaliter costulata basi sensim angustata superne secus costam minute setulosa apice in rostrum 2.5 mm longum sensim contracta. Pappus simplex 4 mm longus albus, setis gracilimis sigillatim caducis, sub lente scabris.

Nuristan: Chatrass (Aug. 2, 1955 S. K.)—Typus in Herb. Univ. Kyoto.

Lactuca longifoliae affinis sed a qua foliis oblanceolato-oblongis irregulariter pinnatilobatis, capitulis angustioribus 10 floris flavis, acheniis nigris distinguenda.

Lactuca saligna L., Sp. Pl. 796 (1753).—Boiss., F. O. III: 810.—Rech. f., Symb. Afgh. II: 209 (1955).

Distr. Europe, North Africa, Orient, Turkestan, Afghanistan.

Lactuca Scariola L., Sp. Pl. 2 ed. 1119 (1763).—Boiss., F. O. III: 809.—Hooker f., F. B. I. III: 404.—Aitch., J. L. S. XIX: 172, T. L. S. n. III: 83.—Rech. f., Symb. Afgh. II: 211 (1955).

Between Pulikhumri and Haibak (June 27, 1955 S. K.), Kandahar (June 8, 1955 S. K.), Pulikhumri (July 3, 1955 S. K.), between Haibak and Mazarisharif (June 27, 1955 S. K.).

Distr. Siberia, Western Himalaya to Canaries. Rather common in Afghanistan.

The prototype species of the lettuce, which is widely cultivated in the world. The latter is also cultivated in Afghanistan.

Lactuca tatarica C. A. Mey., Enum. Pl. Cauc. 56 (1831).—Boiss., F. O. III: 799.—Hooker f., F. B. I. III: 406.

Mulgedium tataricum DC., Prodr. VII: 248 (1839).—Rech. f., Symb. Afgh. II: 202 (1955).

Between Doab and Shibar (July 10, 1955 S. K.), Kabul, Dal-ul-Aman (July 18, 1955 S. K.), Doab (June 24, 1955 S. K.).

Distr. European Russia through Siberia to China.

The Afghan plants coincide well with the Chinese plants. This species is widely and commonly distributed in Central Asia. The flowers are blue and beautiful.

Lactuca undulata Ledeb., Ic. Fl. Ross. II: 12, t. 129 (1830), Fl. Alt. IV: 156 (1833).—Boiss., F. O. III: 813.—Hooker f., F. B. I. III: 404.

Lataband, Mullaomur (June 15, 1955), Bamian (June 25, 1955).

Distr. Siberia, Sungaria, Afghanistan, Pakistan: Chaman (June 2, 1955 S. K.). New to Afghanistan.

Lactuca viminea Link, Enum. II: 281 (1822).—Aitch., J. L. S. XVIII: 73.

Distr. Afghanistan (Hariab), Europe, North Africa.

Lasiopogon muscoides (Desf.) DC., Prodr. VI: 246 (1838).—Boiss., F. O. III: 224.—Rech. f., Symb. Afgh. II: 27 (1955).—Smol. in Fl. URSS XXV: 377.

Gnaphalium muscoides Desf., Atl. II: 267, t. 231 (1800).

Lasiopogon lanatus Cass. in Bull. Soc. Philom. 75 (1818).—Aitch., J. L. S. XVIII: 169.

Distr. Mediterranean Region, South Africa, Caucasus, Iran, Afghanistan, Pakistan.

Launaea acanthodes (Boiss.) O. Kuntze, Rev. Gen. Pl. I: 351 (1891).—Rech. f., Symb. Afgh. II: 199 (1955).

Zollikoferia acanthodes Boiss., F. O. III: 827.

Distr. Iran, Afghanistan.

Launaea fallax (Jaub. et Sp.) O. Kuntze, Rev. Gen. Pl. I: 351 (1891).—Muschler, Man. Fl. Egypt II: 1059 (1912).—Rech. f., Symb. Afgh. II: 199 (1955).

Zollikoferia fallax Boiss., F. O. III: 824.

Microrhynchus fallax Jaub. et Spach, Ill. Orient. III: 106, t. 276 (1847-50).

Launaea nudicaulis (non Less.) Hooker f., F. B. I. III: 416.

Microrhynchus nudicaulis (non Less.) Aitch., T. L. S. n. III: 83.

Near Herat (July, 1955 K. Yamashita), Doab (July 10, 1955 S. K.).

Distr. Egypt, Arabia, Mesopotamia, Iran, Afghanistan, India.

Launaea resedifolia O. Kuntze, Rev. Gen. Pl. I: 351 (1891).

Launaea chondrilloides (DC.) Hooker f., F. B. I. III: 415.

Zollikoferia chondrilloides DC., Prodr. VII: 183 (1839).

Zollikoferia mucronulata Boiss., Diag. Ser. I, VII: 12 (1846), F. O. III: 802.

Sonchus Candolleanus Jaub. et Spach, Ill. Orient. III: 110, t. 279 (1847–60).

Leontodon mucronata Forsk., Fl. Aeg. Arab. Descr. 144 (1775).

Scorzonera resedifolia L., Sp. Pl. 1198 (1753).

Between Jalalabad and Sarobi (June 17, 1955 S. K.).

Distr. Pakistan: Karachi (May 17, 1955 S. K.), Afghanistan, Iran, Arabia, Egypt.

Pappus persistent. Achene 5 mm long.

Launaea secunda (Clarke) Hooker f., F. B. I. III: 416 (1881).—Kitamura, Fl. Faun. Nepal Himalaya 261 (1955).—Rech. f., Symb. Afgh. II: 199, fig. 141, 145 (1855).

Microhynchus secundus Clarke, Comp. Ind. 27 (1876).—Aitch., J. L. S. VIII: 74.

Nuristan: Between Seprigal and Voma (July 29, 1955 S. K.).

Distr. Afghanistan, Himalaya: from Hazara to Nepal.

Launaea stenocephala (Boiss.) Burkill, Fl. Pl. Baluchistan 44 (1909).—Rech. f., Symb. Afgh. II: 202 (1955).

Zollikoferia stenocephala Boiss., F. O. III: 823 (1875).

Distr. Afghanistan (according to Rechinger), Pakistan.

Launaea tomentella Rech. f., Symb. Afgh. II: 202, fig. 138 (1955).

Microhynchus spinosus (non Sch.-Bip.) Aitch., T. L. S. n. III: 83.

Pass to Iranian Frontier (July, 1955 K. Yamashita).

Distr. Afghanistan, Pakistan: Chaman (June 2, 1955 S. K.).

Leontopodium campestre (DC.) Hand.-Mzt., l. c. 130 (1928).—Rech. f., Symb. Afgh. II: 27 (1955).

Distr. Afghanistan, Siberia, Altai, Mongolia, Sungaria, Pamir, Turcomanistan, China: Sinkiang.

Leontopodium Ochroleucum Beauv. in Bull. Soc. Bot. Genève Sér. 2, VI: 146 (1914).—Grubov in Fl. URSS XXV: 350, Tab. XXII, fig. 1.

Leontopodium leontopodium (DC.) Hand.-Mzt., Beih. Bot. Centralbl. XLIV: 118, Abb. 4 (1928).—Bornm. in Engler, Bot. Jahrb. LXVI: 231 (1934).—Wendelbo in Nytt Mag. Bot. I: 64 (1952).—Rech. f., Symb. Afgh. II: 27 (1955).

Distr. Afghanistan, Altai, Ang.-Sayan, Dz.-Tarb., Pam.-Al., Tianshan, Himalayas, Karakoram, Tibet, China: Sinkiang, Mongolia,

Ligularia persica Boiss., Diag. Ser. I, VI: 93 (1845), F. O. III: 383.—Aitch., J. L. S. XVIII: 70.—Pojark. in Not. Syst. Herb. Kom. XII: 303, Fig. 3, 311 (1950).—Rech. f., Symb. Afgh. II: 60 (1955).

L. afghanica Pojark. in Not. Syst. Herb. Kom. XII: 312 (1950).

Distr. Afghanistan, Iran, Central Asia: Pam.-Al. Tianshan, Dz.-Tarb.

Ligularia trigonophylla Rech. f., Symb. Afgh. II: 60 (1955).

Distr. Afghanistan.

Matricaria Chamomilla L., Sp. Pl. 891 (1753).—Hooker f., F. B. I. III: 315—Hegi, Ill. Fl. Mittel-Europa VI, 582 (1929).—Rech. f., Symb. Afgh. II: 43 (1955).

Matricaria suaveolens L., Fl. Suec. 297 (1745).—Aitch., J. L. S. XVIII: 69.

Distr. Europe, Asia Minor, Siberia, Caucasus, Iran, Afghanistan, Pakistan, India.

Matricaria disciformis (C. A. Mey.) DC., Prodr. VI: 51 (1838).—Ledeb., Fl. Ross. II, 2: 544 (1845).—Aitch., J. L. S. XVIII: 69.—Rech. f., Symb. Afgh. II: 43 (1955).

Chrysanthemum disciformis C. A. Mey., Verz. Pfl. Cauc.: 75 (1831).

Chamaemelum disciforme Vis., Fl. Dalm. II: 85 (1847).—Boiss. F. O. III: 327.—Bornmüller in Engler, Bot. Jahrb. LXVI: 232 (1934).

Zerni (Sept. 2, 1955 T. Umesao), Taiwara (Sept. 8, 1955 T. Umesao), near Kabul (June 11, 1955 S. K.), Doab (June 24, 1955 S. K.), Charikar (June 23, 1955 S. K.).

Distr. Caucasus, Iran, Afghanistan, Armenia.

In Afghanistan, this species is a common weed of the cultivated fields and of the roadside.

Matricaria lamellata Bunge in Mém. Sav. Étrang. Pétersb. VII: 335 (1847).—Rech. f., Symb. Afgh. II: 43 (1955).

Distr. Turkestan, Afghanistan.

Matricaria lasiocarpa Boiss., F. O. III: 324 (1875).—Aitch., T. L. S. n. III: 76.—Bornmüller in Engler, Bot. Jahrb. LXVI: 232 (1934).

Hab. Shishigar (June 11, 1955 S. K.).

Distr. Afghanistan, Pakistan.

Micropus erectus L., Sp. Pl. Add. post ind. (1753).—Boiss., F. O. III: 241.

Bombycilaena erecta Smoljaninova in Not. Syst. XVII: 450, Fig. 2 (1955), in Fl. URSS XXV: 302, Tab. XVIII, fig. 2.

Distr. Europe, North Africa, Asia Minor, Transcaucasia, Iran, Afghanistan.

Micropus longifolius Boiss. et Reut., F. O. III: 242.—Rech. f., Symb. Afgh. II: 26 (1955).

Cymbolaena longifolia Smoljaninova in Not. Syst. XVII: 452, Fig. 3 (1955), l. c. 306, Tab. XVIII, fig. 3.

Charikar (June 23, 1955 S. K.).

Distr. Afghanistan, Turkestan, Pakistan, Iran, Caucasus, Mesopotamia, Syria, Asia Minor.

Myriactis Wallichii Less. in Linnaea VI: 129 (1831).—Aitch., J. L. S. XVIII: 67.—Hooker f., F. B. I. III: 247.—Hand.-Mzt., Symb. Sin. 1088 (1936).

Myriactis Gmelini (Fisch. et Mey.) DC., Prodr. V: 308 (1839).—Boiss., F. O.

III: 175.—Tamamsch. in Fl. URSS XXV: 52, Tab. II, fig. 1.

Nuristan: Between Seprigal and Voma (July 29, S. K.), between Voma and Trokikorl (July 31, 1955 S. K.).

Distr. Caucasus, Iran, Turkestan, Afghanistan, Himalayas, China: Yunnan, Szechuan.

Oligochaeta albispina (Bunge) Rech. f., Symb. Afgh. II: 185 (1955).

Microlonchus albispinus Bunge, Del. Sem. Dorp. 8 (1843).—Boiss., F. O. III: 701.

Centaurea albispina (Bunge) Aitch. et Hemsl., T. L. S. n. III: 81.

Distr. Iran, Turkestan, Afghanistan, Pakistan.

Oligochaeta leucosmerinx Rech. f. et Köie, Symb. Afgh. II: 184, fig. 126 (1955).

Distr. Afghanistan (C).

Onopordon Acanthium L., Sp. Pl. 827 (1753).—Boiss., F. O. III: 559.—Aitch., J. L. S. XVIII: 71.—Rech. f., Symb. Afgh. II: 180 (1955).

Between Ghazni and Kabul (June 7, 1955 H. Kihara), Charikar (June 23, 1955 S. K.).

Distr. Europe, Aisa Minor, Iran, Afghanistan, Turkestan, Sungaria.

Onopordon leptolepis DC., Prodr. VI: 618 (1838).—Boiss., F. O. III: 564.—Aitch., T. L. S. n. III: 80.—Rech. f., Symb. Afgh. II: 181 (1955).

Distr. Armenia, Iran, Afghanistan.

Pertya Aitchisoni C. B. Clarke ex Aitch., J. L. S. XVIII: 72 (1880), XIX: 173, Plate XIX (1882).—Rech. f., Symb. Afgh. II: 185 (1955).

Distr. Afghanistan (E), Pakistan.

Pertya Mattfeldii Bornmüller in Fedde, Rep. Beih. 108: 65, Taf. 22 (1938).

Nuristan: Between Pushuki and Kushimaicot (Aug. 9, 1955 S. K.).

Distr. Afghanistan.

Phagnalon darvasicum H. Krasch. in Fl. et Syst. III: 343 (1936).—Boriss. in Fl. URSS XXV: 379.

Phagnalon glabrifolium Rech. f., Symb. Afgh. II: 34, fig. 23, 24 (1955).

Nuristan: Between Seprigal and Voma (July 29, 1955 S. K.).

Distr. Afghanistan, Pam.—Al.

Our plants are taller than those described by Rechinger. Stem caespitose 40 cm long.

Phagnalon nitidum Fresen., Pl. Aeg. 81, tab. 4, fig. 2 (1834).—Boiss., F. O. III: 220.—Rech. f., Symb. Afgh. II: 35 (1955).

Distr. Arabia, Iran, Afghanistan.

Phagnalon niveum Edgew. in T. L. S. XX: 68 (1846).—Aitch., J. L. S. XIX: 169.—Hooker f., F. B. I. III: 288.—Rech. f., Symb. Afgh. II: 35 (1955).

Nuristan: Between Seprigal and Voma (July 29, 1955 S. K.).

Distr. Afghanistan, Western Himalaya.

Picridium tingitanum Desf., Fl. Atlant. II: 220 (1800).—Boiss., F. O. III: 828.—Hooker f., F. B. I. III: 413.

Distr. Mediterranean Region, Iran, Afghanistan, Pakistan.

Picris hieracioides L., Sp. Pl. 792 (1753).—Boiss., F. O. III: 734.—Hooker f., F. B. I. III: 393.—Aitch., J. L. S. XVIII: 73.

subsp. **nuristanica** (Bornmüller) Kitamura in Acta Phytotax. Geobot. XVII: 37 (1957).

Picris nuristanica Bornm. in Fedde, Rep. Beih. 108: 68 (1938).

Picris afghanica Rech. f. et Köie, Symb. Afgh. II: 186, fig. 127 (1955).

Nuristan: Trokikorl (Aug. 1, 1955), Pronz (Aug. 4, 1955), Eschtaway (Aug. 5, 1955), between Trokikorl and Chatrass (Aug. 1, 1955), Pagman near Kabul (July 15, 1955).

Distr. Afghanistan, Pakistan, Karakoram: Askole 3200 m (S. Nakao).

Picris hieracioides is widely distributed in Eurasia from the Atlantic coast to the Pacific coast and is diversified into many subspecies. The western subspecies including subsp. *nuristanica*, have usually brown or yellowish brown achenes, while the eastern subspecies including subsp. *kaimaensis* (from Nepal to Korea) have usually reddish brown achenes.

Subsp. *nuristanica* differs from subsp. *hieracioides* by the narrower head. The corolla is intensely yellow. The involucre is green. Achenes 4.5–5 mm long.

The writer found an abnormal form with involucre without spine in Nuristan, Trokikorl; f. *mutica* (Aug. 1, 1955 S. K.).

Plagiobasis sogdiana Bunge in Mém. Sav. Étrang. Pétersb. VII: 361 (1851).—Boiss., F. O. III: 614.

Between Pulikhumri and Haibak (June 27, 1955 S. K.).

Distr. Afghanistan, Turkestan.

Achenia matura 3.5 mm longa 1 mm lata dense sericea apice truncata annulata basi leviter angustata, areola laterali affixa. Pappus albus 6.5 mm longus, setis ∞ —seriatis rigidiusculis apice attenuatis scabris, exterioribus gradatim brevioribus, extremis squamiformibus. Flosculus pilosus. Involucris squamulae imbricatae obtusae trivittatae.

Pluchea caspica (Pall.) Benth. ex Aitch., T. L. S. n. III: 74 (1888).—O. Hoff. in O. Paulsen, Pl. Olufsen's Pam. Exped. in Kjoeb. Vidensk. Meddel. 1903, 147.—Rech. f., Symb. Afgh. II: 26 (1955).

Serratula caspica Pall., Reise II: 743, App. no 121, tab. 2 (1773).

Karelinia caspica Less. in DC., Prodr. V: 375 (1836).—Boiss., F. O. III: 219.

Distr. Afghanistan, Turkestan, Sungaria, Altai, Southern Russia.

Pulicaria (§ Francoeuria) **afghanica** Kitamura in Acta Phytotax. Geobot. XVII: 37 (1957). **Fig. 101.**

Caulis ultra 30 cm altus teres 3 mm diametro pilis albis longis vel brevibus patentibus glandulosis dense praeditus, e basi ramosus, ramis divaricatis glandulosopilosis. Folia

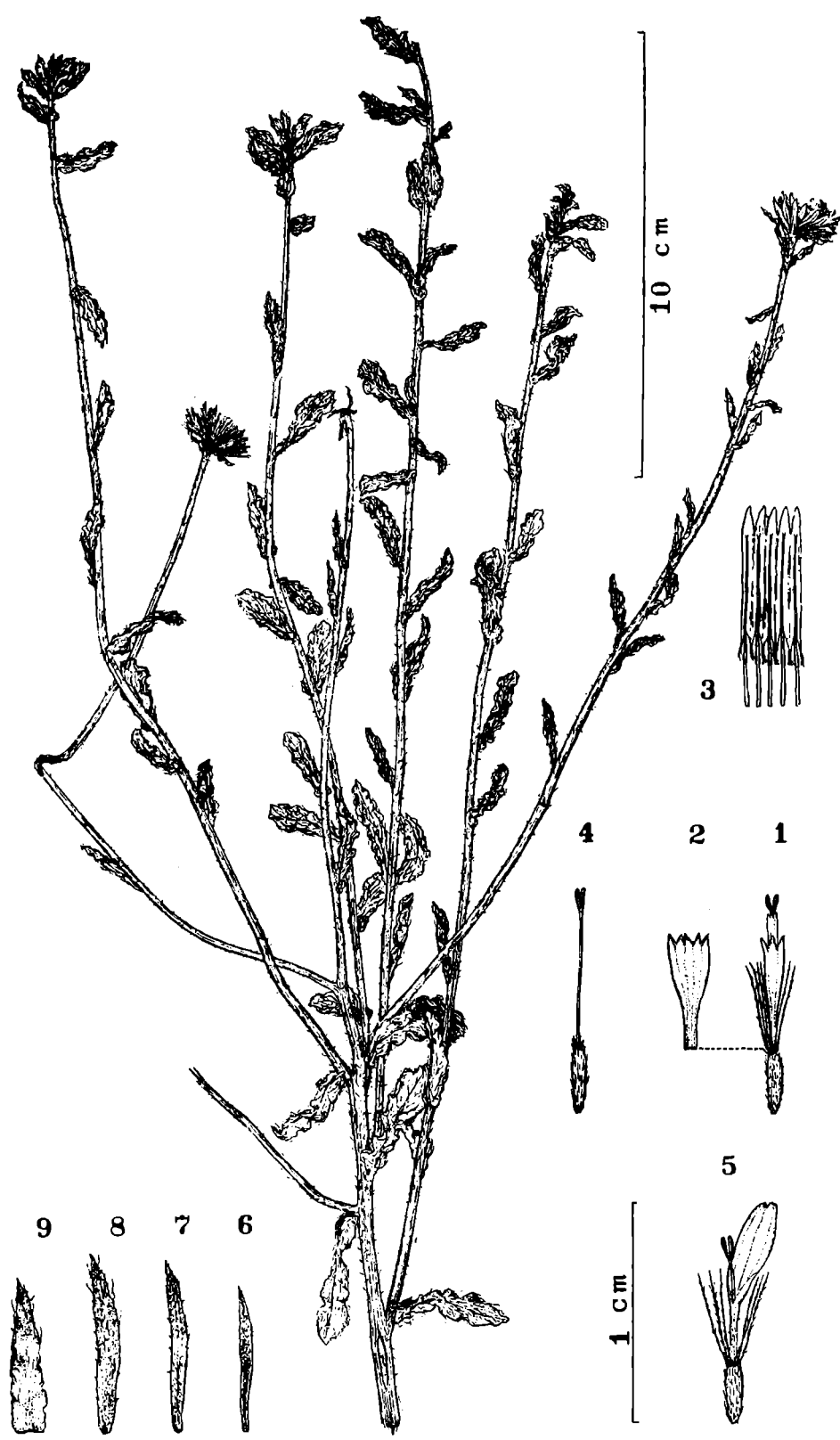


Fig. 101. *Pulicaria afghanica* Kitam.: 1 Floret, 2 Corolla, 3 Anthers, 4 Pistil, 5 Floret, 6—9 Involucral Scales. (Between Bulola and Doab).

caulina subapproximatim disposita oblanceolato-oblonga 20–27 mm longa 6–10 mm lata apice obtusa vel rotundata basi leviter angustata sessilia late semiamplexicaulia margine crebre undulata utrinque dense cinereo-floccosa, folia caulina superiora quam caulina media parum minora. Capitula 18 mm lata in sicco ad apices ramorum terminantia solitaria. Involucrum hemisphaericum 18 mm latum 8 mm altum in sicco, squamae 3-seriales subaequilongae, exteriores herbaceae oblanceolatae 1 mm latae apice acutae pilis crispis et pilis brevibus glandulosis praeditae, interiores lanceolatae 0.8–1 mm latae apice acuminatae. Flores radii foeminei uniseriales, corolla ligulata flava 6.5 mm longa 1 mm lata sparse pilosa, tubo 3 mm longo. Flores disci, hermaphroditi copiosi, corolla 5.5 mm longa apice 5-fida inferne sparse pilosa. Antherae basi sagittatae. Achenia cylindrica 2 mm longa 0.4 mm lata dense hirsuta. Pappus duplex, setis exterioribus brevissimis 0.5 mm longis persistentibus, setis interioribus 5.5 mm longis gracilibus sordide albis vel ferrugineis barbellatis deciduis. Receptaculum alveolatum.

Between Bulola and Doab (June 25, 1955 S. K.)—Typus in Herb. Univ. Koyto.
Distr. Afghanistan.

Pulicaria arabica (L.) Cass. in Dict. Sc. Nat. XCIV: 94 (1825).—Boiss., F. O. III: 205.—Rech. f., Symb. Afgh. II: 38 (1955).

Distr. Egypt, Syria, Asia Minor, Mesopotamia, Iran, Afghanistan.

Pulicaria carnosa (Boiss.) Kitamura in Acta Phytotax. Geobot. XVII: 38 (1957).
Platychaete carnosa Boiss., Diag. Ser. II, III: 10 (1856), F. O. III: 209.

Distr. Afghanistan.

Pulicaria crispa Benth., Gen. Pl. II: 336 (1873).—Hooker f., F. B. I. III: 299.—Rech. f., Symb. Afgh. II: 38 (1955).

Francoeuria crispa (Forsk.) Cass. in Dict. XXXIV: 44 (1825).—Boiss., F. O. III: 206.

Distr. Canary and Cape de Verd Islands, Mediterranean Reg., Iran, Afghanistan, Pakistan: Chaman (June 2, 1955 S. K.), India.

Pulicaria demissa Boiss., F. O. III: 205.

Distr. Afghanistan (W).

Pulicaria dysenterica (L.) Gaertn., Fr. II: 462 (1791).—Boiss., F. O. III: 201.—Hooker f., F. B. I. III: 298.—Rech. f., Symb. Afgh. II: 38 (1955).—Gorubkova in Fl. URSS XXV: 490, Tab. XXX, fig. 3.

Distr. Afghanistan, Europe, North Africa.

var. **microcephala** Boiss., F. O. III: 202.—Rech. f., l. c.

P. uliginosa Steb. in DC., Prodr. V: 478 (1836).—Gorubkova, l. c. 491, Tab. XXX, fig. 1.

Distr. Afghanistan, Central Asia, Iran, Caucasus, Asia Minor, Syria, Mesopotamia, Southern Europe.

var. **stenophylla** Boiss., l. c.—Rechinger f., l. c.

P. uliginosa Stev. var. *stenophylla* (Boiss.) Gorubkova, l. c. 492, Tab. XXX, fig. 2.
Distr. Iran, Afghanistan.

Pulicaria foliolosa DC., Prodr. V. 480 (1836).—Hooker f., F. B. I. III: 298.—
Aitch., T. L. S. n. III: 75.

Between Kabul and Sarobi, near Ghunoy (June 15, 1955 S. K.).

Distr. India, Afghanistan, Himalayas.

Pulicaria gnaphaloides Boiss., Diagn. Ser. I, VI: 76 (1845), F. O. III: 203.—
Aitch., T. L. S. n. III: 75.—Hooker f., F. B. I. III: 299.—Gorubkova, l. c. 496, Tab.
XXXI, fig. 1.

Inula gnaphaloides Vent., Hort. Cels. t. 75 (1803).

Distr. Iran, Afghanistan, Turkestan, Western Himalaya.

Pulicaria olivascens Rech. f., Symb. Afgh. II: 39, fig. 29, 30 (1955).

Charikar (June 22, 1955 S. K.).

Distr. Afghanistan.

Pulicaria prostrata (Gilib.) Aschers., Fl. Brand. I: 304 (1864).—Gorubkova, l. c.
489, Tab. XXX, fig. 4.

Pulicaria vulgaris Gaertn., Fruct. II: 461, t. 173 (1791).—Boiss., F. O. III:
204.—Hooker f., F. B. I. III: 298.—Aitch., J. L. S. XIX: 169.

Distr. Europe, North Africa, Siberia, Asia Minor, Caucasus, Central Asia, Iran,
Afghanistan, Pakistan, Western Himalaya.

Pulicaria sublepidota Rech. f., Symb. Afgh. II: 40, fig. 31, 32 (1955).

Distr. Afghanistan (NE).

Rhaponticum integrifolium C. Winkler in Acta Horti Petrop. IX: 425 (1886).
—Rech. f., Symb. Afgh. II: 181 (1955).

Distr. Afghanistan, Turkestan,

Rhaponticum pellucidum (Rech. f.), Symb. Afgh. II: 184 (1955).

Centaurea pellucida Rech. f., Österr. Bot. Zeitschrift XCVII: 251 (1950).

Distr. Afghanistan.

Saussurea albescens Hooker f. et Thomson ex Clarke, Comp. Ind. 233 (1876).
—Hooker f., F. B. I. III: 374.

Aplotaxis albescens DC., Prodr. VI: 540 (1838).—Rech. f., Sym. Afgh. II: 170
(1955).

Distr. Afghanistan (NE), Himalaya from Kashmir to Nepal, Pakistan.

Saussurea amplifolia (Bornm.) Rech. f., Symb. Afgh. II: 170 (1955).

Jurinea amplifolia Bornm. in Fedde, Rep. Beih. 108: 54, Taf. 16, cum *α. sylvatica*,
β. agrestis & *pannosa* et subsp. *remotiloba* Bornm.

Nuristan: Between Voma and Trokikorl (July 31, 1955 S. K.), between Trokikorl
and Chatrass (Aug. 1, 1955 S. K.), between Pushuki and Kushitaki (Aug. 4, 1955
S. K.).

Distr. Afghanistan (Nuristan).

This species belongs to Sect. *Frolovia* (*Aplotaxis* Sect. *Frolovia* DC.). The matured achene 5.5 mm long 2 mm broad, brown obscurely tetragonal, apex muricate with short (1 mm long) denticulate corona. Bristles of the pappus are uniserial white 11 mm long plumose, and fused each other at the base, and are deciduous from the achene. This species is abundant along Pech River, usually grows on rock. The shape of the leaf is variable.

Saussurea aphylla Rech. f., Symb. Agh. II: 167, fig. 111 (1955).

Distr. Afghanistan (C).

Saussurea chthonocephala Bornm. in Fedde, Rep. Beih. 108: 59 (1938).—Rech. f., Symb. Afgh. II: 170 (1955).

Distr. Pakistan, Afghanistan (NE).

Saussurea Griffithii Boiss., Diag. Ser. II, III: 47 (1856), F. O. III: 566.

Distr. Afghanistan (E).

Saussurea heteromalla (D. Don) Hand.-Mzt., Symb. Sin. 1152 (1936).

Cirsium heteromallum Spreng., Syst. III: 372 (1826).

Carduus heteromallus Don, Prodr. Fl. Nepal. 166 (1825).

Saussurea candicans C. B. Clarke, Compositae Indicae 232 (1876).—Hooker f., F. B. I. III: 373.—Aitch., J. L. S. XIX: 173.

Aplotaxis candicans DC., Prodr. VI: 540 (1838).

Saussurea Brahuica Boiss., F. O. III: 566.

S. brassicifolia (Bornm.) Rech. f., Symb. Afgh. II: 170 (1955).

Jurinea brassicifolia Bornm. in Fedde, Rep. Beih. 108: 55, Taf. 17 (1938).

Distr. Afghanistan (E), Himalaya: from Kashmir to Bhutan, Pakistan: Panjab (May 27, 1955 S. Nakao), Abbottabad (Mar. 8, 1952 O. Suzuka).

Saussurea Kerstanii (Bornm.) Rech. f., Symb. Afgh. II: 170 (1955).

Jurinea Kerstanii Bornm. in Fedde, Rep. Beih. 108: 56, Taf. 18 (1938).—Rech. f., l. c. 174.

Distr. Afghanistan (NE).

From the description, this species is related to *S. heteromalla*.

Saussurea polyptera Rech. f. et Köie, Symb. Afgh. II: 172, fig. 115, 116 (1955).

Distr. Afghanistan (NE).

Scorzonera afghanica Rech. fil. in Öterr. Bot. Zeitsch. XCVII: 264 (1950), Symb. Afgh. II: 191, fig. 131 (1955).

Distr. Afghanistan (NW, C, E, Nuristan).

Scorzonera (*Epilasia*) **ammophilla** Bunge in Mém. Sav. Étrang. Pétersb. VII: 378 (1851).

Epilasia ammophila Hooker f., F. B. I. III: 419.—Aitch., T. L. S. n. III: 84.

Distr. Afghanistan, Turkestan.

Scorzonera (*Epilasia*) **cenopleura** Bunge in Mém. Sav. Étrang. Pétersb. VII: 378 (1851).—Boiss., F. O. III: 782.—Rech. f., Symb. Afgh. II: 191 (1955).



Fig. 102. *Scorzonera monocarpica* Kitam.: 1 Floret, 2 Achenes, 3 and 4 Involucral Scales. (Between Pulikhumri and Haibak).

Distr. Afghanistan (NW), Central Asia: Kyz.-Kum.

Scorzonera circumflexa H. Krasch. et Lipsch. in Bull. Soc. Nat. Mosc. n. XLIII: 148 (1934).—Rech. f., Symb. Afgh. II: 191 (1955).

Distr. Turkestan, Afghanistan (SW).

Scorzonera Codringtonii Rech. f. in Österr. Bot. Zeit. XCVII: 263 (1950), Symb. Afgh. II: 191, fig. 132 (1955).

Distr. Afghanistan (C).

Scorzonera crassicaulis Rech. f., Symb. Afgh. II: 191, fig. 133 (1955).

Distr. Afghanistan (C).

Scorzonera (Scaposae) **ferganica** H. Krasch. in Acta Inst. Bot. Acad. Sc. URSS ser. I, Fasc. 1: 180 (1933).—Rech. f., Symb. Afgh. II: 194 (1955).

Distr. Afghanistan, Central Asia.

Scorzonera Koeieana Rech. f., Symb. Afgh. II: 192, fig. 134 (1955).

Distr. Afghanistan (C, NE).

Scorzonera laciniata L., Sp. Pl. 791 (1753).—Boiss., F. O. III: 757.—Rech. f., Symb. Afgh. II: 195.

Doab (June 24, 1955 S. K.).

Distr. Europe, Siberia: eastward to Altai, Iran, Afghanistan.

Scorzonera mollis Bieb., Fl. Tauric. Cauc. III: 522 (1819).—Boiss., F. O. III: 761.—Aitch., J. L. S. XVIII: 74, T. L. S. n. III: 84.

Distr. Afghanistan, Iran, Mesopotamia, Caucasus, Asia Minor, Greece.

Scorzonera (Epilasia) **monocarpica** Kitamura in Acta Phytotax. Geobot. XVII: 38 (1957). Fig. 102.

Species *S. acrolasiae* affinis a qua acheniis 5-costatis, secus costam muricatis divergit. A *S. ammophylla* caule foliisque tomentosis, foliis latioribus distinguenda.

Radix annua vel biennis perpendicularis elongata. Caulis 10–25 cm altus 3–4 mm diametro e basi valde ramosus, ramis divaricato-ascendentibus, ramulosis, ramulis juvenilis floccosis. Folia radicalia et inferiora sub anthesi saepe emarcida spathulata 3.5–5 cm longa 12–15 mm lata apice rotundata basi sensim angustata margine undulata utrinque plus minus floccosa textura crassa. Folia caulina media oblanceolato-oblonga 2.5–5 cm longa 10–15 mm lata apice obtusa vel acuta basi sensim angustata sessilia non amplexicaulia margine undulata, utrinque floccosa, subtus secus nervos et margine minute cartilagineo-serrulata. Folia caulina superiora minora lanceolata apice acuminata margine undulata. Capitula ad apices ramorum terminantia longe pedunculata, pedunculis nudis demum 4.5–10 cm longis. Involucrum globoso-campanulatum primum floccosum demum glabratum, sub anthesi 13 mm longum et latum in sicco, post anthesin 15 mm longum 25–30 mm latum, squamae 2–3 seriales, exteriores patentes undulatae, plus minus foliaceae ovato-oblongae 8–9 mm longae 5–6 mm latae apicem angustatae obtusae margine albae minute cartilagineo-serrulatae, interiores oblongo-lanceolatae apice obtusae albo-marginatae demum reflexae. Receptaculum alveolatum.

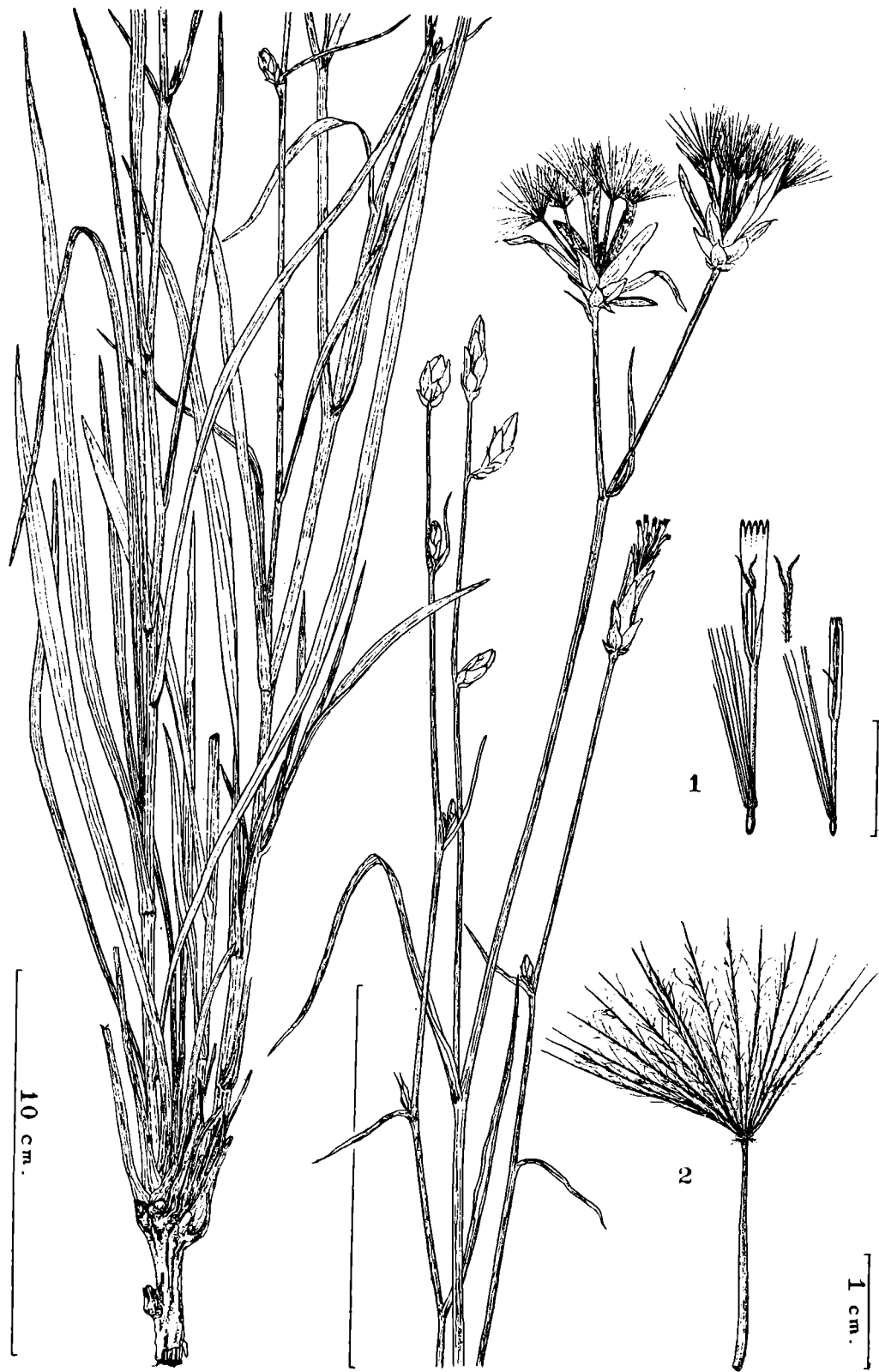


Fig. 103. *Scorzonera nuristanica* Kitam.: 1 Floret, 2 Achene. (Nuristan: Between Pronz and Eschtaway).

Flores numerosi, corolla lilacina 21 mm longa 4 mm lata tubo 6 mm longo densiuscule piloso. Antherae purpurascentes. Achenia 4.5–5 mm longa 2 mm lata costato-5-gona secus costam minute deorsum muricata sub apice pappifera basim versus leviter angustata ad basim concava. Pappus 9–10 mm longus, setis copiosis sordide albus plumosis.

Nuristan: Between Pulikhumri and Haibak (June 27, 1955 S. KITAMURA).—Typus in Herb. Univ. Kyoto.

Scorzonera (Foliosae) **nuristanica** Kitamura in Acta Phototax. Geobot. XVII: 39 (1957). Fig. 103.

Radix perennis elongata lignescens 6–8 mm diametro. Caulis saepe caespitosus ad collum basibus foliorum anni praecedenti fusco-squamato, non fibroso, 35–60 cm altus erectus gracilis striatus floccosus viridis 1.5–4 mm diametro ramosus, ramis ascendentibus. Folia omnia linearia, radicalia 20–33 cm longa medio 2.5–5 mm lata apice attenuata 5-nervata margine integra sed sub lente calloso-muricata, folia caulia sursum gradatim minora, media 13–20 cm longa 1.5–4 mm lata, superiora 3–5.5 cm longa, omnia apice attenuata non cirrhosa. Capitula ad apices ramorum terminantia, pedunculis demum 2.3–6 cm longis, interdum bracteis ovatis 2.5 mm longis praeditis vel ebracteatis. Involucrum cylindricum sub anthesi 22–27 mm longum, medio 7–8 mm latum in sicco, post anthesin 27–30 mm longum plus minus albo-lanatum demum glabrescens, squamae paucae 4-seriales laxae imbricatae margine anguste albo-membranaceae sub lente ciliolatae, extimae late ovatae 3–4 mm longae, mediae oblongae apice obtusae, intimae lanceolatae sub anthesi erectae demum patentes. Flores 6–14, corolla flava subtus rubescens 20–24 mm longa, 3.5 mm lata tubo 8.5–9 mm longo piloso. Antherae flavae. Achenia linearia 19–20 mm longa 1 mm lata angulata glabra utrinque truncata. Pappus fusco-albescens 18–20 mm longus, setis inaequilongis apice attenuatis intricato-plumosis superne scabris.

Species *S. purpureae* similis sed a qua collo squamato nec fibroso, corollis flavis, involucri squamis exterioribus late ovatis differt.

Nuristan: Between Pronz and Eschtaway 2500 m alt. (Aug. 5, 1955 S. K.)—Typus in Herb. Univ. Kyoto, between Kushimaicot and Pushuki 2200 m alt. (Aug. 3, 1955 S. K.), Chatrass, Budigrah 2100 m alt. (Aug. 1, 1955 S. K.)—post anthesin, between Trokikorl and Chatrass 1500 m alt. (Aug. 1, 1955 S. K.).

Scorzonera papposa DC., Prodr. VII: 119 (1839).—Boiss., F. O. III: 765.—Aitch., T. L. S. n. III: 84.

Distr. Syria, Mesopotamia, Iran, Afghanistan.

Scorzonera (Scaposae) **picridioides** Boiss., Diag. Ser. I, VII: 6 (1846), F. O. III: 763.—Rech. f., Symb. Afgh. II: 195.

Distr. Iran, Afghanistan, Pakistan.

Scorzonera pusilla Pallas, Reise II: 744 (1773).—Boiss., F. O. III: 771.—Aitch., T. L. S. n. III: 84.—Rech. f., Symb. Afgh. II: 196 (1955).

Distr. Southern Russia, Central Asia, Sungaria, Iran, Afghanistan, Pakistan.

Scorzonera (Podospermum) **radicosa** Boiss., F. O. III: 759 (1875).—Rech. f., Symb. Afgh. II: 196 (1955).

Distr. Iran, Afghanistan.

Scorzonera tortuosissima Boiss., F. O. III: 775 (1875).

var. **polyclada** (Rech. f. et Köie) Kitamura stat. nov.

Scorzonera polyclada Rech. f. et Köie, Symb. Afgh. II: 195, fig. 135 (1955).

Pagman near Kabul (Jul. 15, 1955 S. K.), Kabul (Jul. 22, 1955 S. K.).

The stems and leaves are not canescent, but sparsely pubescent.

Distr. sp. Iran, Afghanistan.

Scorzonera tunicata Rech. f. et Köie, Symb. Afgh. II: 196, fig. 136 (1955).

Distr. Afghanistan (SW).

Scorzonera turcomanica H. Krasch. et Lipsch. in Lipschitz, Fragm. Monogr. Gen. Scorzon. 80 (1935).—Rech. f., Symb. Afgh. II: 199 (1955).

Distr. Transcaspia, Afghanistan.

Senecio chrysanthemoides DC., Prodr. VI: 365 (1838).—Aitch., J. L. S. XVIII: 70.—Hooker f., F. B. I. III: 339.—Köie and Rech. f., Symb. Afgh. II: 56 (1955).

var. **analogus** (DC.) Hooker f., l. c. (1881).—Wendelbo in Nytt Magasin for Botanikk I: 66 (1952).

Senecio analogus DC., Prodr. VI: 366 (1938).

Senecio sisymbriiformis DC., Prodr. VI: 366 (1838).—Aitch., J. L. S. XVIII: 70.

Nuristan: Eschtaway (Aug. 5, 1955 S. K.), between Kushitaki and Pronz (Aug. 4, 1955 S. K.), Shabul Gul (Aug. 1955 S. K.).

Distr. Afghanistan (E), Pakistan, Western Himalaya.

This species is a Himalayan element, abundant in 2000–4000 m of Nuristan.

Senecio coronopifolius Burmann, f., Fl. Ind. 181, t. 60–5 (1768).

Senecio coronopifolius Desf., Fl. Atl. II: 273 (1800).—Boiss., F. O. III: 390.—Aitch., J. L. S. XVIII: 70, T. L. S. n. III: 77.—Hooker f., F. B. I. III: 341.—Wendelbo in Nytt Mag. Bot. I: 66 (1952).—Rech. f., Symb. Afgh. II: 57 (1955).

Between Sarobi and Kabul (June 18, 1955 S. K.).

Distr. Mediterranean Region to Turkestan, Sungaria, Altai, Tibet, Afghanistan, Pakistan, Western Himalaya.

var. **subdentatus** Boiss., l. c. (1875).

S. subdentatus Ledeb., Fl. Alt. IV: 110 (1833), Ic. tab. 493 (1834).

Distr. Iran, Afghanistan, Turkestan.

Senecio coronopifolius Burm. f. was published as a Javanese species, and was not subsequently found in Java. *S. coronopifolius* Burm. f. looks like *S. coronopifolius* Desf. (1800) independently described. Burmann's specimen might be collected in India.

Senecio Decaisnei DC., Prodr. VI: 342 (1838).—Boiss., F. O. III: 386.

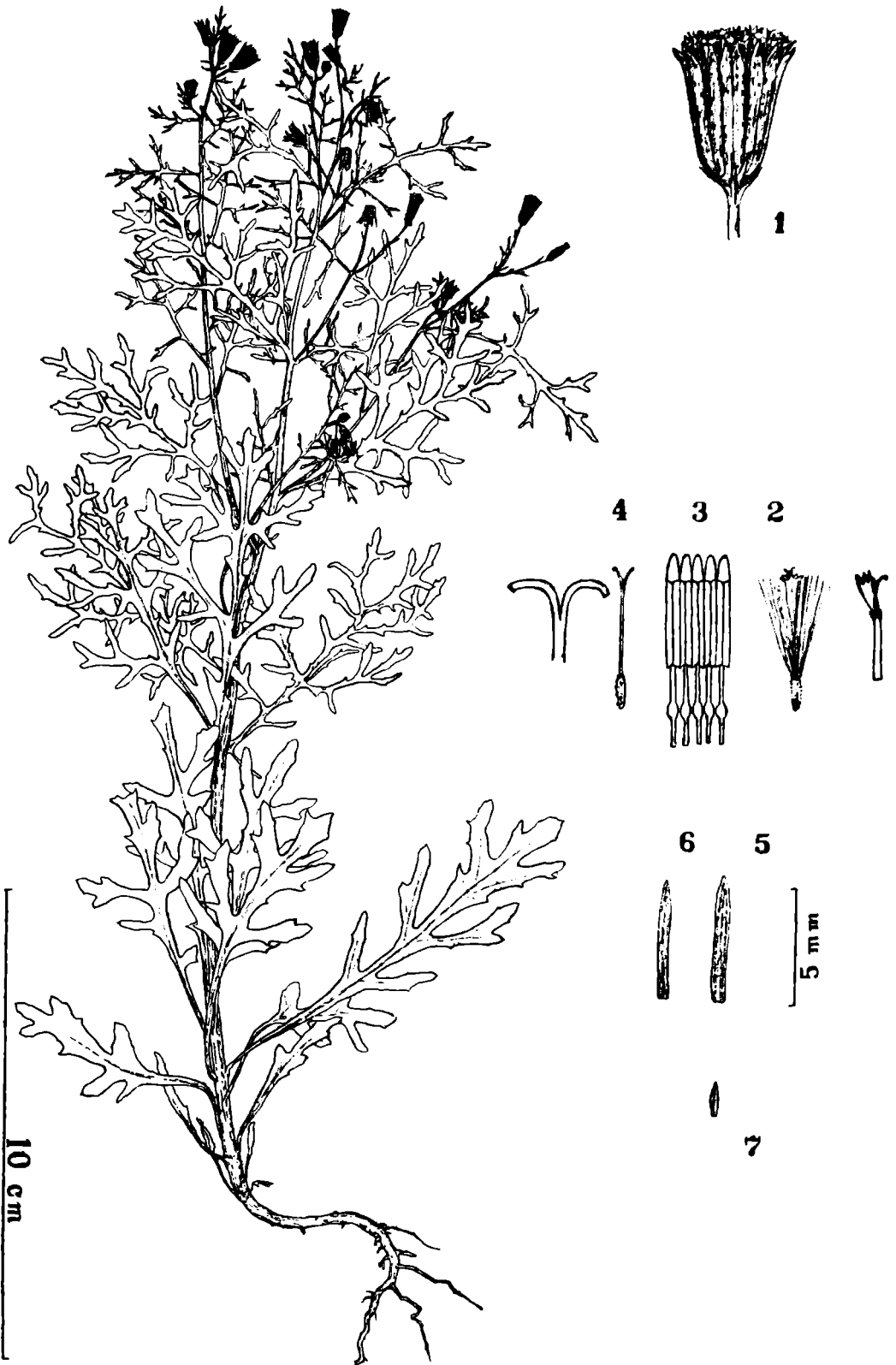


Fig. 104. *Senecio hindukushensis* Kitam: 1 Head, 2 Florets, 3 Anthers, 4 Pistil, 5—7 Involucral Scales. (Nuristan: Chatrass).

Distr. Mediterranean Region, Iran, Afghanistan, Pakistan.

Senecio (Jacobaea) **hindukushensis** KITAMURA in Acta Phytotax. Geobot. XVII: 39 (1957). **Fig. 104.**

Species *S. ramoso* affinis a quo flosculis majoribus foliis bipinnatisectis divergit.

Radix annua perpendicularis ramosa. Caulis cum ramis 30 cm altus inferne curvatus superne erectus 2.5–4 mm diametro, striatus puberulus, ramosus, ramis ascendentibus. Folia radicalia sub anthesi emarcida, caulina inferiora et media in sicco valde debilia, ambitu obovato-oblonga 5–8 cm longa 2–3.5 cm lata basi in petiolum 1–2 cm longum contracta utrinque plus minus puberula, irregulariter bipinnatisecta, lacinulis 1–2 mm latis obtusis, rachidibus 1–2 mm latis. Folia caulina superiora sursum gradatim minora demum lineari-lanceolata, ad pedunculos 1 mm longis. Capitula 5–8 mm lata in sicco, numerosa laxe corymbosim disposita, pedunculis gracilibus 8–25 mm longis. Involucrum tubuloso-campanulatum 5.5–6 mm longum, squamae exteriores paucae calyculatae 4–5, ovato-acuminatae 1–1.5 mm longae, interiores uniseriales 13–15, lanceolatae apice acuminatae sub lente minute pilosae, anguste hyalino-marginatae dorso glabratae. Flores radii foeminei, corolla flava 4.2 mm longa, ligula 13 mm longa apice profunde trifida. Flores disci tubulosi, corolla flava 4.5 mm longa, pars angusta tubi 2.8 mm longa. Achenia cylindrica 2.8 mm longa 0.4 mm lata apice truncata, dense hirsuta. Pappus candidus 3.5–4.5 mm longus, setis gracilibus deciduis minute scabris. Receptaculum nudum scorbiculatum.

Nuristan, Chatrass 2100 m alt. (Aug. 2, 1955 S. KITAMURA)—Typus in Herb. Univ. Kyoto, between Trokikori and Chatrass 2000 m alt. (Aug. 1, 1955 S. KITAMURA).

Distr. Afghanistan.

This is a western vicariant of Himalayan *S. ramosa*.

Senecio Khorasanicus Rechinger f. et Aell. in Österr. Bot. Zeitschr. 97: 236 (1950), Kōie and Rechinger f., Symb. Afgh. II: 57, Fig. 44.

Distr. Afghanistan.

Senecio Koelzii Rechinger f., Symb. Afgh. II: 57, Fig. 45, 46 (1955).

Distr. Afghanistan (NE).

Senecio Krascheninnikovii Schischkin in Not. Syst. Kom. XV: 410 (1953).

Senecio pedunculatus Edgew. in J. L. S. XX: 74 (1846) non Sch. Bip. (1844).—Hooker f., F. B. I. III: 342.—Aitch., J. L. S. XIX: 170.—Hoffm. in O. Paulsen, Pl. Olufsen's Pamir Exped. 153 (1903).

Distr. Afghanistan (E), Himalaya: from Kashmir to Garwal, Tianshan, China: Sinkiang.

Senecio nudicaulis Hamilton ex D. Don, Prodr. Fl. Nep. 179 (1825).—Hooker f., F. B. I. III: 340.

Senecio pallens var. *violascens* Wallich ex Clarke, Comp. Ind. 191 (1876).—Aitch., J. L. S. XVIII: 70.

Eastern Province : Kandai (July 27, 1955 S. K.).

Distr. Afghanistan (E), Pakistan : Murree, Panjab 2000 m (May 27, 1955 S. Nakao), Himalaya : from Kashmir to Sikkim.

Senecio vulgaris L., Sp. Pl. 867 (1753).—Boiss., F. O. III : 386.—Köie and Rech. f., Symb. Afgh. II : 60 (1955).

Distr. Europe, North Africa, Asia Minor, Iran, Afghanistan. Introduced in temperate regions of the World.

Serratula latifolia Boiss., Diag. Ser. I, X : 96 (1849), F. O. III : 586.—Rechinger f., Symb. Afgh. II : 181 (1955).

Distr. Iran, Afghanistan.

Siegesbeckia orientalis L., Sp. Pl. 900 (1753).—Boiss., F. O. III : 250.—Aitch., J. L. S. XVIII : 69.—Hooker f., F. B. I. III : 303.

Distr. Eastern Europe, Asia Minor, Mesopotamia, Caucasus, Iran, Afghanistan to Eastern Asia, Australia.

Solidago Virgaurea L., Sp. Pl. 880 (1753).—Aitch., J. L. S. XVIII : 67.—Rech. f., Symb. Afgh. II : 5 (1955).—Juzep. in Fl. URSS XXV : 34 (1959).

S. Virgaurea L. var. *pubescens* Clarke, Comp. Ind. 35 (1876).

Nuristan : Between Kushimaicot and Pushuki (Aug. 3, 1955 S. K.), between Chatrass and Kushimaicot (Aug. 2, 1955 S. K.), between Trokikorl and Chatrass (Aug. 1, 1955 S. K.).

Distr. sp. Eurasia.

The Afghan plants have densely hirsute achenes, and the involucre just like those of the European race.

According to C. B. Clarke, this race is also distributed in Himalaya, eastwards to Nepal, while Hooker f. (F. B. I. III 245), reported this race (var. *pubescens* Clarke) from Nepal to Khasia Mts.

C. B. Clarke, reported *S. Virgaurea* β . *glabriuscula* (= *S. Virgaurea* subsp. *leiocarpa* Hultén) in Khasi hills, while Hooker reported var. *leiocarpa* (= β *glabriuscula*) from Kashmir to Nepal.

I suppose that subsp. *Virgaurea* may be distributed from Europe to Nepal, and that subsp. *leiocarpa* may be found from Khasia Mts. to Japan. Subsp. *leiocarpa* will be found between Khasia Mts. and Nepal. According to E. Hultén, in the North subsp. *leiocarpa* is found from Yenisei to the Aleutian Islands.

Sonchus arvensis L. var. **laevipes** Koch, Syn. D. u. Schw. Fl. 2 ed. 498 (1844).—Hegi, Ill. Fl. Mitt. Europ. V₂ : 1106.—Hand.-Mzt., Symb. Sin. Anth. IV : 1179 (1936).

Sonchus arvensis L. var. *glabrescens* Guenth., Grab. & Wimm.

Sonchus uliginosus Bieb., Fl. Taur. Cauc. II : 238 (1808).—DC., Prodr. VII : 187 (1839).

Sonchus lachnocephalus Rech. f., Symb. Afgh. II : 202, fig. 139, 140 (1955).

Eastern Prov. Kandai (July 27, 1955), Ghunoy near Sarobi (June 15, 1955), Ghunoy (June 15, 1955 S. K.).

Distr. Europe, Caucasus, Central Asia, Afghanistan, Karakoram, Himalayas, China (introduced into North Africa).

The sculpture of the achene is variable, trisulcate and not distinctly costulate or distinctly 5-7 costulate and transversally rugose as in var. *arvense*.

Sonchus asper Garsault, Fig. Pl. et. Anim. Med. IV, t. 565 (1764), 332 (1769).—Hill, Herb. Brit. I: 47 (1769).—Vill., Hist. Dauph. III: 158 (1789).—Boiss., F. O. III: 796.—Hooker f., F. B. I. III: 414.—Aitch., J. L. S. XVIII: 74 (1880), T. L. S. n. III: 83.—Rech. f., Symb. Afgh. III: 202 (1955).

Kandahar (June 6, 1955 S. K.).

Distr. Cosmopolitan weed. Wild or introduced.

Sonchus maritimus L., Sp. Pl. 2 ed. 1116 (1763).—Boiss., F. O. III: 797.—Hooker f., F. B. I. III: 414.—Rechinger f., Symb. Afgh. II: 203 (1955).

Between Siyagird and Charikar (July 11, 1955).

Distr. Pakistan, Afghanistan, westwards to the Atlantic.

Sonchus oleraceus L., Sp. Pl. : 794 (1753).—Boiss., F. O. III: 795.—Hooker f., F. B. I. III: 414.—Hoffm. in O. Paulsen, Pl. Olufsen's Pam. Exped. 159 (1903).—Rech. f., Symb. Afgh. II: 203 (1955).

Between Pulikhumri and Haibak (June 27, 1955), between Haibak and Mazarisharif (June 27, 1955).

Distr. Cosmopolitan weed. Pakistan: Quetta (May 27, 1955 S. K.).

Tagetes erectus L., Sp. Pl. 887.—Hoffm. in O. Paulsen, Pl. Olufsen's Pamir Exped. 149 (1903).

Distr. A native of Mexico, cultivated in Afghanistan (Ishikashim).

Taraxacum.

I collected 5 species in Afghanistan. The application of the specific name is very difficult without many specimens from Afghanistan and neighboring countries. Here the specific names reported from Afghanistan by Handel-Mazzetti in his Mongr. Taraxacum (1907) are enumerated. The conception of species in his work is too large for practical identification.

Taraxacum alpinum Heget. et Heer, Fl. Schweiz 762 (1840).—Hand.-Mazt., Mongr. Tarax. 95 (1907).

Distr. Alpine regions of Europe and Central Asia, Afghanistan (Kuram).

Taraxacum brevirostre Hand.-Mazt., l. c. 46.

Distr. Iran, Afghanistan (Kaloo Griffith), Tibet, Central Asia.

Taraxacum dissectum Ledeb., Fl. Ross. II: 814 (1846).—Hand.-Mazt., l. c. 47.

T. parvulum? Aitch., J. L. S XVIII: 73.

Distr. Swiss, Caucasus, Central Asia, Iran, Afghanistan (Kuram Aitch., Griffith), Himalayas, Tibet, W. China.

Taraxacum Lapponicum Kihlman in Meddel. af Soc. pr. Faun. et Fl. fennica S. A. 63-64 (1884).—Hand.-Mazt., 1. c. 73.

Distr. Circumpolar Region.? Afghanistan (Choky, Hajeeguk, Siah Sung Griffith).

Taraxacum microcephalum Pomel, Nouv. Mat. Fl. Atl. 8 (1874).—Hand.-Mazt., 1. c. 18.

Distr. Africa, Asia Minor to Afghanistan (Erak Griffith).

Taraxacum monochlamydeum Hand.-Mazt., 1. c. 44.

Taraxacum Dens-leonis Aitch. (non Desf.), J. L. S. XVIII: 73.

Distr. Mesopotamia, Central Asia, Afghanistan (Badghis, Hari-rud-Valley, Kuram), Himalayas.

Taraxacum officinale Weber in Wigg., Prim. Fl. Holsat. 56 (1780).

T. vulgare Schrank, Primit. Fl. Salisb. 193 (1792).—Hand.-Mazt., 1. c. 88.

Kandahar (June 6, 1955 S. K.), Pagman (July 15, 1955 S. K.), Taiwara (Sept. 8, 1955 T. Umesao), near Kabul (June 11, 1955 S. K.), Dal-ul-Aman (July 18, 1955 S. K.).

Distr. Europe and W. Asia, widely naturalized in the World.

Taraxacum pseudo-nigricans Hand.-Mazt. in Ann. natur. Hoffm. Wien 1906: 427, 1. c. 51.—Bornm. in Engler, Bot. Jahrb. LVI: 132 (1934).

Distr. Asia Minor, Armenia, Mesopotamia, Afghanistan (Kabul), W. Himalaya.

Taraxacum syriacum Boiss., Diag. Pl. Or. II, III: 96 (1856).—Hand.-Mazt., 1. c. 125.

T. montanum Aitch. (non C. A. Mey.), J. L. S. XVIII: 73.

Distr. Palestine, Asia Minor to Afghanistan and Central Asia.

Taraxacum Wallichii DC., Prodr. VII: 147 (1839).—Hand.-Mazt., 1. c. 42.

Distr. From Caspian Region and Syria to India and Mongolia, Afghanistan (Pushut, Choky Griffith).

***Taraxacum* sp. 1** Mediocris, foliis 15-18 cm longis, profunde pinnatifidis, scapis post anthesin 25 cm longis, involucris demum 24 mm longis, squamis exterioribus ovatis ecorniculatis, anguste albo-marginatis apice rosascentibus, interioribus post anthesin non manifeste incrassato-carinatis, floribus flavis, pappis albis, acheniis corpore 3.5 mm longis spinulosis stramineis. cf. *T. pseudonigricans* sensu Bornm.

Near Kabul (June 11, 1955 S. K.).

***Taraxacum* sp. 2** Mediocris, foliis 10-20 cm longis, pinnatifidis vel lobatis scapis post anthesin 25-35 cm longis, involucris demum 20 mm longis, squamis exterioribus oblongo-lanceolatis ecorniculatis patentibus, interioribus post anthesin manifeste incrassato-carinatis, floribus flavis, pappis albis, acheniis corpore 3.5 mm longis spinulosis stramineis.

Nuristan: Between Pronz and Eschtaway (Aug. 5, 1955 S. K.), between Kushi-maicot and Pushuki (Aug. 3, 1955 S. K.).

***Taraxacum* sp. 3** Parva, foliis 5-12 cm longis, profunde pinnatifidis, laciniis valde

reflexis, scapis post anthesin 6–7 cm longis, involucris post anthesin 16 mm longis, squamis exterioribus lanceolatis albo-marginatis ecorbiculatis vel parvicorniculatis, interioribus non manifeste incrassato-carinatis, floribus flavis, pappis albis, acheniis corpore 3.7 mm longis stramineis.

Nuristan: Shabul Gul in alpine region (Aug. 6, 1955 S. K.).

Taraxacum sp. 4 Parva, foliis 7–9 cm longis, profunde pinnatifidis vel lobatis, scapis post anthesin 5–14 cm longis, involucris post anthesin 12–13 mm longis, squamis exterioribus ovato-lanceolatis vel ovatis, corniculis magnis roseis instructis, interioribus post anthesin non incrassatis, floribus flavis, pappis albis, acheniis corpore 2.2 mm longis fusco-stramineis.

Between Bulola and Doab in marshy place (June 25, 1955 S. K.).

Thevenotia persica DC., Prodr. VI: 110 (1838).—Boiss., F. O. III: 454.—Rech. f., Symb. Afgh. II: 70 (1955).

Distr. Afghanistan, Iran, Assyria.

Thevenotia scabra Boiss., F. O. III: 455.—Aitch., T. L. S. n. III: 77.

Distr. Afghanistan (NW), Iran.

Tragopogon afghanicum Rech. f. & Köie, Symb. Afgh. II: 189, fig. 128, 129 (1955).

Dal-ul-Aman, Kabul (July 18, 1955 S. K.).

Distr. Afghanistan (C).

Stem 50–90 cm tall. Involucre 6 cm long. Flowers yellow. Other characters are like those of the description of Rechinger.

Tragopogon agrostiphyllum Rech. f. & Köie, Symb. Afgh. II: 190, Fig. 130 (1955).

Distr. Afghanistan (E,C).

Tragopogon albo-marginatum KITAMURA in Acta Phytotax. Geobot. XVII: 40 (1957). Fig. 105.

Caulis 35 cm altus ramosus ramis ascendentibus 2–4 mm diametro, ad axillis floccosus. Folia caulina lanceolata 12–17 cm longa medio 10–15 mm lata basi vaginatodilatata 15–27 mm lata, apice longe attenuata anguste albo-marginata longitudinaliter 9-parallelis-nervosa utrinque glauca, textura crassiuscula. Capitula ad apices ramorum solitaria, pedunculis sub anthesi 4.5 cm post anthesin 7–9 mm longis apice non dilatatis circ. 2 mm diametro. Involucrum sub anthesi 2.5 cm, post anthesin 4.5 cm longum, squamae 5, lanceolatae apice acuminatae sub anthesi medio 6 mm latae, post anthesin medio 7 mm, basi 9 mm latae dorso glabrae glaucopruinosae. Corolla flava 27 mm longa 2.5 mm lata tubo 4 mm longo. Achenia 21–24 mm longa straminea cylindrica 2–3 mm lata leviter incurvata basi truncata apice in rostrum indistinctum crassum brevem sensim angustata ad apicem villosa, interiora glabrata, exteriora dense squamuloso-verruculata. Pappus fuscescens 22 mm longus, setis subaequilongis apice attenuatis intricato-plumosis.

Species *S. agrostiphylo* et *T. angustissimo* affinis a quibus foliis latioribus albo-

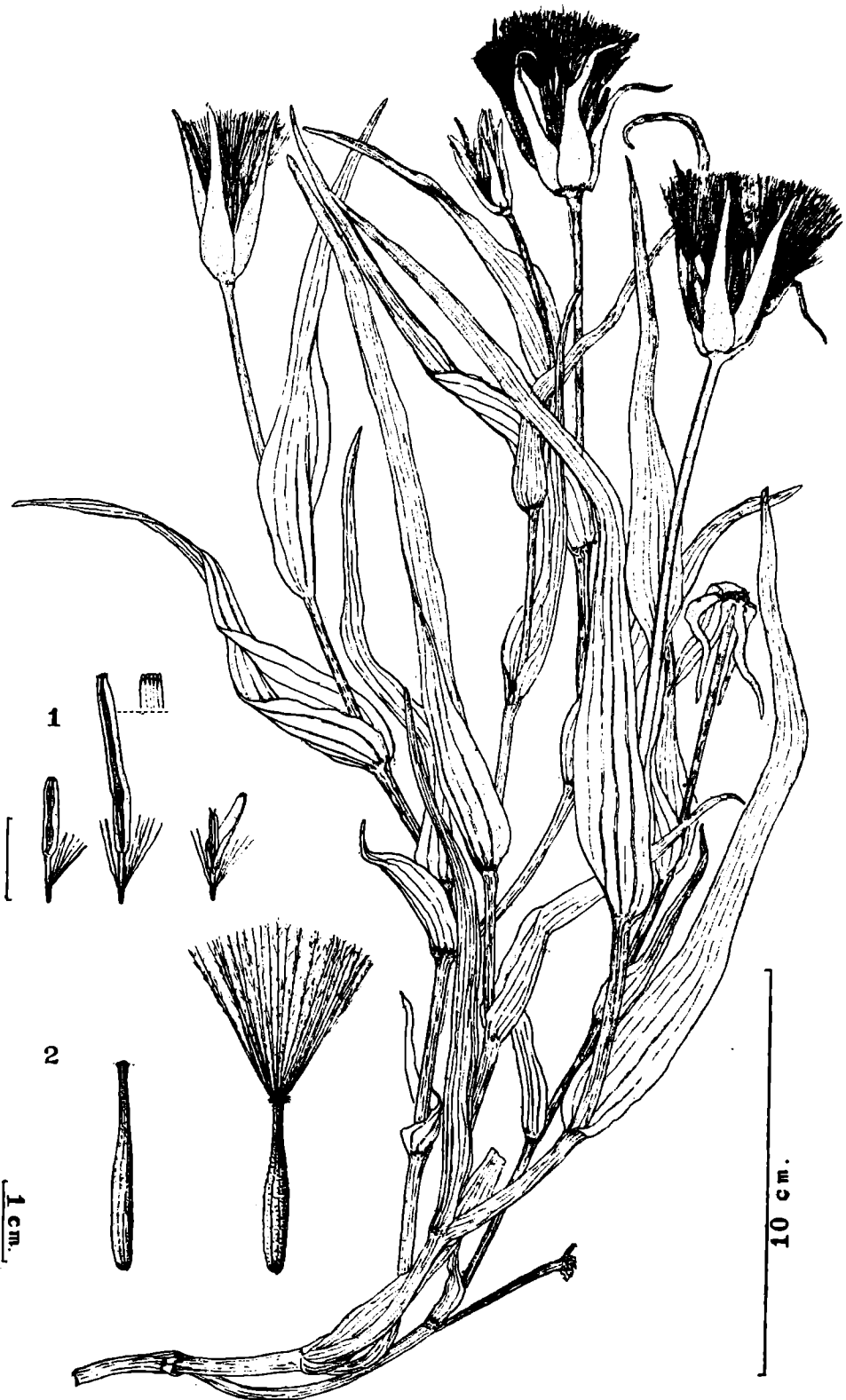


Fig. 105.] [*Tragopogon albo-marginatum* Kitam.: 1 Florets, 2 Achenes. (Between Sarobi and Kabul).

marginatis, squamis involucri latioribus, rostro achenii apice villosa differt.

Between Sarobi and Kabul circ. 2000 m alt. (June 18, 1955 S. KITAMURA)—Typus in Herb. Univ. Kyoto.

Distr. Afghanistan.

Tragopogon collinum DC., Prodr. VII: 115 (1839).—Boiss., F. O. III: 746.—Rech. f., Symb. Afgh. II: 189, fig. 128 right (1955).

Distr. Armenia, Transcaucasia, Iran, Afghanistan (NW).

Tragopogon coloratum C. A. Mey., Verz. Pl. Cauc.: 61 (1831).—Boiss., F. O. III: 746.—Aitch., T. L. S. n. III: 83.

Distr. Asia Minor, Armenia, Iran, Afghanistan.

Tragopogon graminifolium DC., Prodr. VII: 114 (1839).—Boiss., F. O. III: 752.—Aitch., T. L. S. n. III: 84.

Distr. Transcaucasia, Iran: Between Damagan and Teheran (July 12, K. Yamashita), Tabriz (July 28, 1955 K. Yamashita).

Tragopogon gracile Don, in Mem. Wern. Soc. III: 414 (1820), Prodr. Fl. Nep. 162 (1825).—Hooker f., F. B. I. III: 417.—Rech. f., Symb. Afgh. II: 191 (1955).

T. junceum Wall. ex DC., Prodr. VII: 115 (1839).—Aitch., J. L. S. XVIII: 74 (1880).

Nuristan, Shabul Gul (Aug. 6, 1955 S. K.).

Distr. Himalaya: from Hazara to Nepal, Afghanistan.

Tragopogon longirostre Bisch. ex Sch. Bip. in Webb. et Berth., Phyt. Canar. II: 469 (1836–50).—Rech. f., Symb. Afgh. II: 191.

Distr. Asia Minor, Afghanistan, Syria, Mesopotamia, Arabia.

Tricholepis chaetolepis (Boiss.) Rech. f., in Österr. Bot. Zeitschr. XCVII: 251 (1950), Symb. Afgh. II: 181 (1955).—Wendelbo in Nytt Mag. Botanikk I: 67 (1952).—Lincz. in Not. Syst. Kom. XVI: 482 (1954).

Jurinea chaetolepis Boiss., Diag. Ser. II, III: 50 (1856), F. O. III: 570.

Tricholepis spartioides Clarke, Comp. Ind. 241 (1876).

Distr. Afghanistan (E).

Tricholepis tibetica Hooker. f. et Thomson in Clarke, Comp. Ind. 241 (1876).—Hooker f., F. B. I. III: 382.—Hemsley in Hooker, Icones Pl. XVIII: Pl. 1732 (1888).

Nuristan: Between Seprigal and Voma (July 29, 1955 S. K.).

Distr. Northern Kashmir, Afghanistan, Pakistan.

Afghan plants differ from the plants described by Clarke and Hooker in some points. The heads of Afghan plants 17 mm long, 10–15 mm broad. The involucre 15 mm long 7–9 mm broad arachnoid. Achene 4 mm long 1.1 mm broad striate. Pappus 8–10 mm long, hairs of pappus falling separately. Corolla 13 mm long. The base of the stem arachnoid.

Tussilago Farfara L., Sp. Pl. 865 (1753).—Boiss., F. O. III: 377.—Aitch., J.

L. S. XVIII: 70.—Wendelbo in Nytt. Mag. Bot. I: 66 (1952).—Köie and Rech. f., Symb. Afgh. II: 56 (1955).

Nuristan: Between Voma and Chatrass (Aug. 1, 1955 S. K.).

Distr. Europe, Siberia, Himalaya to China.

Varthemia asperella Rech. f., Symb. Afgh. II: 35, fig. 25, 26 (1955).

Between Siyagird and Charikar (July 11, 1955 S. K.).

Distr. Afghanistan.

Varthemia persica DC., Prodr. V: 473 (1836).—Boiss., F. O. III: 211.—Rechinger f., Symb. Afgh. II: 37 (1955).—Gorubkova in Fl. URSS XXV: 486.

Inula rupestris Aitch. et Hemsl., J. L. S. XIX: 169 (1882).

Distr. Iran, Afghanistan. Gorn.—Turkm.

Varthemia platylepis Rech. f. & Köie, Symb. Afgh. II: 37, fig. 27, 28 (1955).

Distr. Afghanistan (C).

Xanthium Strumarium L., Sp. Pl. 987 (1753).—Boiss., F. O. III: 251.—Aitch., J. L. S. XVIII: 69.—Hooker f., F. B. I. III: 303.—Smol. in URSS XXV: 524, Tab. XXXII: fig. 1.

Distr. Eurasia, North Africa.

Xeranthemum longepapposum Fisch. et Mey. in Nouv. Mém. Nat. Mosc. IV: 337 (1835).—Boiss., F. O. III: 445.—Rech. f., Symb. Afgh. II: 68 (1955).

Distr. Asia Minor, Iran, Afghanistan.

Zoegea crinita Boiss., Diag. Ser. II, III: 63 (1856), F. O. III: 698.

Distr. Iran, Afghanistan, Pakistan.

Zoegea purpurea Fresen. in Mus. Senckenb. 86 (1833).—Boiss., F. O. III: 698.

Distr. Arabia, Iran, Afghanistan, Pakistan.

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Winklera	166	<i>Z. canescens</i>	350
Withania	354	<i>Z. clinopodioides</i> var. <i>canescens</i>	350
Wulfenia	361	Zizyphus	267
		<i>Z. vulgaris</i>	267
Xanthium	453	<i>Z. Jujuba</i>	268
Xeranthemum	453	Zoegea	453
<i>Xiphium Stocksii</i>	78	<i>Zollikoferia acanthodes</i>	431
		<i>Z. chondrilloides</i>	432
Zabelia	372	<i>Z. fallax</i>	431
Zannichellia	25	<i>Z. mucronulata</i>	432
Zataria	350	<i>Z. stenocephala</i>	432
<i>Z. humilis</i>	336	Zosima	291
<i>Z. multiflora</i> var. <i>elatior</i>	350	Zygophyllum	250
Zea	48	<i>Z. oxianum</i>	250
<i>Zehneria umbellata</i>	377	<i>Z. portulacoides</i>	249

